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JANUARY 1918

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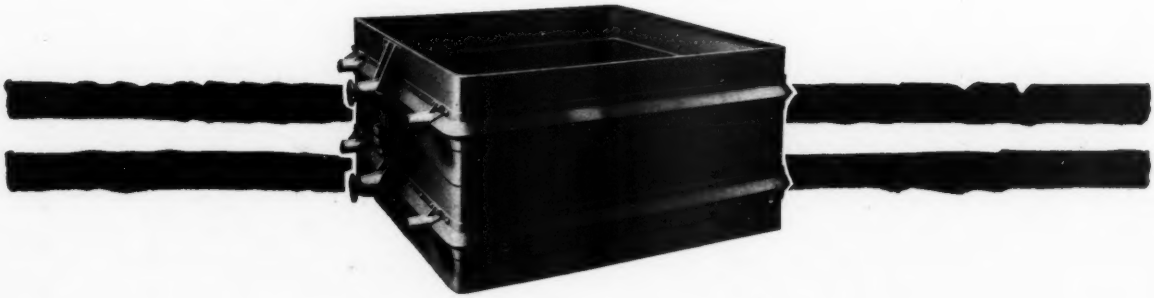

INDUSTRIAL-ARTS MAGAZINE

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Published Monthly by

THE BRUCE PUBLISHING COMPANY, Milwaukee, Wis.

Established 1891

FRANK M. BRUCE, Publisher

W. J. LAKE, Eastern Advertising Manager

E. E. KRILL, Business Manager

H. KASTEN, Subscription Manager

OFFICES

MILWAUKEE: 129 MICHIGAN ST. New York: 112 East 19th St. Chicago: 64 W. Randolph St.

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SUBSCRIPTION INFORMATION.

The subscription price of the *Magazine* is $1.50 per year, payable in advance. Postage for Canadian and Mexican subscriptions, 35 cents; for foreign countries, 50 cents. Single copies, not over six months old, 25 cents; more than six months old, 50 cents. Notice for discontinuance of subscriptions must reach the Publication Office in Milwaukee, at least fifteen days before date of expiration, with full balance due to date. Notices for changes of address should invariably include the old as well as the new form of address. Complaints of non-receipt of subscribers' copies cannot be honored unless made within fifteen days after date of issue.

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The Board of Editors invites contributions of all kinds bearing upon the Industrial-Arts Education, Manual Training, Art Instruction, Domestic Science, and related subjects. Unless otherwise arranged for, manuscripts, drawings, projects, news articles, etc., should be sent to the Publication Office in Milwaukee, where proper disposition will be made. The Board of Editors meets once or oftener each month in Chicago, and all contributions submitted are given careful attention. Contributions when accepted are paid for at regular space rates. In all cases manuscripts should be accompanied by full return postage.

The Industrial-Arts Magazine is on sale at Brentano's, 5th Ave. and 27th St., New York City; John Wanamaker, Market St., Philadelphia; A. C. McClurg & Co., 218 S. Wabash Ave., Chicago.

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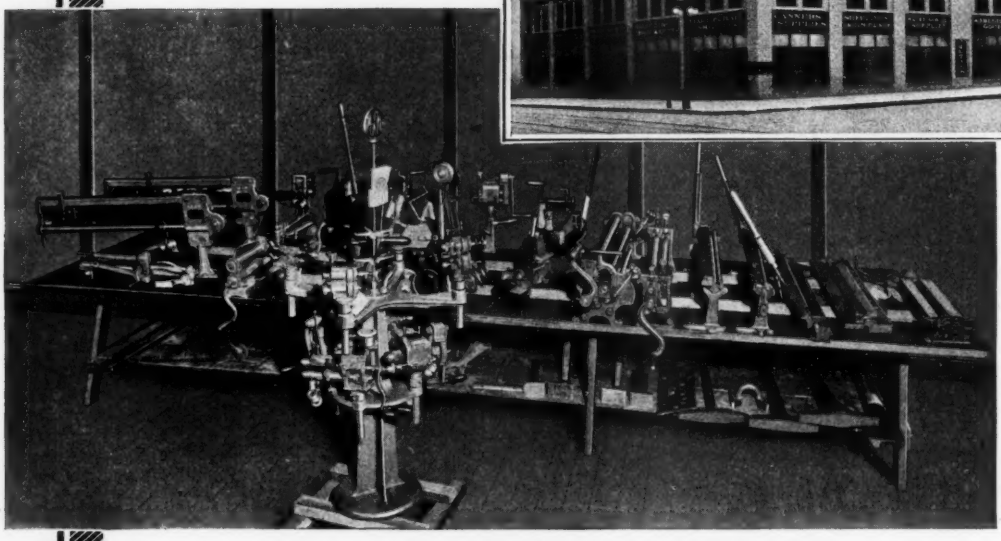

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INDUSTRIAL-ARTS MAGAZINE

Vol. VII JANUARY, 1918 No. 1

AMERICA'S PATRIOTIC JUNIORS

What the Schools of One City are Doing to Aid Uncle Sam

Arthur F. Hopper, Director of Manual Arts, Plainfield Public Schools, Plainfield, N. J.

AT the present time much interest is being shown in the nation-wide movement to enroll the children of the public schools of America in the Junior Red Cross.

The following is a proclamation recently issued by President Wilson to the school children of the United States:

"The President of the United States is also President of the American Red Cross. It is from these offices joined in one that I write you a word of greeting at this time, when so many of you are beginning the school year.

"The American Red Cross has just prepared a junior membership with school activities, in which every pupil in the United States can find a chance to serve our country. The school is a natural center of your life. Thru it you can best work in the great cause of freedom to which we have all pledged ourselves.

"Our Junior Red Cross will bring to you opportunities of service to your community and to other communities all over the world and guide your service with high and religious ideals. It will teach you how to save in order that suffering children elsewhere may have the chance to live. It will teach you how to prepare some of the supplies which wounded soldiers and homeless families lack. It will send to you, thru the Red Cross bulletins, the thrilling stories of relief and rescue. And, best of all, more perfectly than thru any of your other school lessons, you will learn, by doing those kind things under your teacher's direction, to be the future good citizens of this great country which we all love.

"And I commend to all school teachers in the country the simple plan which the American Red Cross has worked out to provide for your co-operation, knowing as I do, that school children will give their best service under the direct guidance and instruction of their teachers. Is not this, perhaps, the chance for which you have been looking to give your time and efforts in some measure to meet our national needs?"

WOODROW WILSON,
President.

Briefly stated, the plan is for every pupil of the public schools of America to contribute twenty-five cents toward an initial fund which will be used for buying material for Junior Red Cross work. Just as soon as each school obtains its quota, it is enrolled in the Junior Division. Each town or city is to have its local Junior Red Cross Committee. This committee will keep in close touch with the local Red Cross Chapter and also the State Division of the American Red Cross. Plainfield, Boston, St. Louis, Philadelphia, and Chicago have already completed their organization and have the work well in hand. Other cities are rapidly organizing and undoubtedly, in a very short time, the majority of the public schools of America will be engaged in some form of Junior Red Cross work.

This movement has been under way only a few weeks, and those who have taken up the work have been somewhat handicapped by lack of definite information as to the kind of supplies most in demand and instructions for making them. This information, however, will shortly be forthcoming, as Dr. MacCracken, National Chairman of the Junior Red Cross, is now making up a war supply manual. This manual will give specifications of articles that may be made by the children of the public schools. To meet the immediate demand for information before this pamphlet comes out, Mrs. Talbot, of the Atlantic Division, is having mimeographed a list of articles which can be made.

Among the articles now being made in the schools are—hospital garments, refugee garments, pajamas, sweaters, wristlets, socks and other knitted articles, pillows, knitting needles, splints, packing cases, hospital trays, comfort kits, surgical dressings, wool winders, etc. All these articles are urgently needed. This is especially true of surgical dressings and knitted goods. The demand for sweaters is so urgent that the Red Cross have recently been obliged to buy half a million machine-made sweaters, to meet immediate demands.

Doubts have existed in the minds of some people as to whether the children are capable of making knitted garments and surgical dressings. Thanks to the fine system of manual arts work in the public schools of America, the children have taken to this new form of work like ducks to water. In their manual training work, they have learned to use their hands, and they understand the value of accuracy. This training is now showing itself in the Junior Red Cross work. In one school system, surgical dressings which had been made by children and turned in to the local Red Cross Chapter, on being examined, were found to be not only made as well as those worked on by adults, but in many cases were superior. This speaks well for the previous training of the children.

When the Junior Red Cross work was first contemplated, some fears were expressed as to whether it would be of educational value, and the possibility of its upsetting the regular school program caused some discussion. So far as upsetting programs is concerned, this may be a blessing in disguise, as many schools would benefit rather than lose. Schools, for instance, which are so bound up with red tape and tra-

RED CROSS UNITS IN THE PLAINFIELD SCHOOLS.

1. Junior Red Cross Comfort Kit Unit. 2. Junior Red Cross Surgical Dressings Unit. 3. Junior Red Cross Sewing Unit. 4. Second-grade Junior Red Cross Work, children making picture and story books for use in hospitals. 5. Junior Red Cross Knitting Unit. 6. Junior Red Cross Woodworking Unit.

dition that they continue to teach history from a purely political viewpoint, resulting in many cases in a mere memorizing of dates; whose geography is taught in such a way that pupils know little of foreign countries and less of the country in which they live; schools whose girl pupils know a lot about algebra and nothing of domestic science; schools that turn out their graduates stuffed full of book knowledge, but totally unprepared to take their part in the world into which they are thrown on leaving school. It is schools of this type that are apt to feel that the Junior Red Cross movement is wrong and they continue to guard their moss-covered courses.

Wide-awake school systems that are properly organizing this war work find the motive back of it a splendid incentive for patriotic service. Moreover,

many of the projects have as much, and in some cases more, educational value than those they have been doing. For instance, many schools give weaving in the lower grades as a manual training activity; knitting can be learned just as quickly and is far more useful. Numerous schools still retain the old types of sewing courses when pupils labor over sample stitch cards, perhaps making a dozen long rows of various stitches, ten of which they will never have any use for. This is followed by making doll clothes, etc. How very much more practical and useful will be the knowledge gained by making full-sized garments for the Red Cross! Again, in the woodworking departments of many of our schools the model joints, coat-hangers and taboret type of courses are still very much in evidence. The motive back of this work is nil, to say nothing of the educational value which is also absolutely lacking. How much better it would be to take opportunity to instil the lesson of service! Back of the Red Cross packing case, the hospital tray, splints, etc., there is a motive; moreover, the educational value of the work is there.

As a matter of fact, however, the time has not yet come for it to be necessary to do all of this work during the regular school hours. Most of it may be and is being done after school hours by volunteer workers in such a manner than it in no way interferes with regular school work. Should a prolonged war make it necessary to turn out supplies in greater quantities than at present, the public schools will be ready to take their share of the burden, and the experience they will gain will be exceedingly valuable

In raising funds for the work, many schools are giving plays and entertainments which help to stimulate the ingenuity and responsibility of pupils. Such work also emphasizes the general education along civic and social lines. The Red Cross insists that its work shall come up to high standards. This is done primarily for the sake of those who receive the supplies, but incidentally this insistence has its educational effect. Along with the practical advantage of high standards, we also have the spirit of service and patriotism which at this time cannot be too highly emphasized.

The Plainfield public schools were the first to organize. Every school, both public and private, is now enrolled as an auxiliary to the Junior Department of the Red Cross. On October 31st, the treasurer of the Chapter School Committee reported $1,683.50 in the school fund. This money, with what has been added since, totals twenty-five cents for every school child in the town; one hundred per cent membership is often an aim—but not always an achievement.

The spirit of competition has reigned supreme in the enlistment of the Plainfield schools. During the period when the high school was raising the supply fund which entitled it to Junior Membership, the progress of the campaign was marked by a flag which was hung outside each room as soon as its part of the total sum came in. The Parent-Teacher Association of one school raised $140 to be added to the fund for that school. In another school, twenty-five dollars was solicited from an outside source by the principal. When the children heard of this, they renewed their efforts and having raised twenty-five dollars, returned the check to the donor.

It is an interesting fact that the first school in Plainfield to become an auxiliary of the Junior Department of the Red Cross was a school for sub-normal children. So far as is known, this school, which raised its own supply by a sale of articles made by the children, was the first public school in the country to organize on the national plan. Many of the pupils of this school are now energetic knitters.

In ten of the grade schools, the children in grades one and two are snipping for ambulance pillows, and making light weight books from old magazines for hospital use. The third, fourth and fifth grades are busy on wash cloths and squares for bed covers, etc. In grades six to eight the activities center around knitting and surgical dressings.

The Plainfield High School has organized six units, namely: knitting, surgical dressings, comfort kits, sewing, clerical work and woodwork. All the work of the high school is so planned that it may be done outside of school hours. The pupils are enthusiastic and energetic workers, and they have been highly commended by the local Red Cross Chapter for their efficient and timely aid.

The splendid start made by the Plainfield public schools is due to the untiring efforts of Miss Emelyn B. Hartridge, chairman of the local Junior Red Cross Committee, and to the wise and farsighted policy of Dr. Henry M. Maxson, Superintendent of Schools, who is acting as treasurer; also to Mr. Lindsey Best, Principal of the Plainfield High School, who planned the high school units, and the various school committees.

The movement is an opportunity for our American schools. Never before have we had such an opportunity to drive home to the children the lesson of patriotism and the expression of our National Democracy.

"This flag which we honor and under which we serve is an emblem of our unity, our power, our thought and purpose as a nation. It is no other character than that which we give it from generation to generation. The choices are ours. It floats in majestic silence above the hosts that execute those choices whether in peace or in war."—Woodrow Wilson.

RED CROSS PROBLEMS IN ENGLISH SCHOOLS

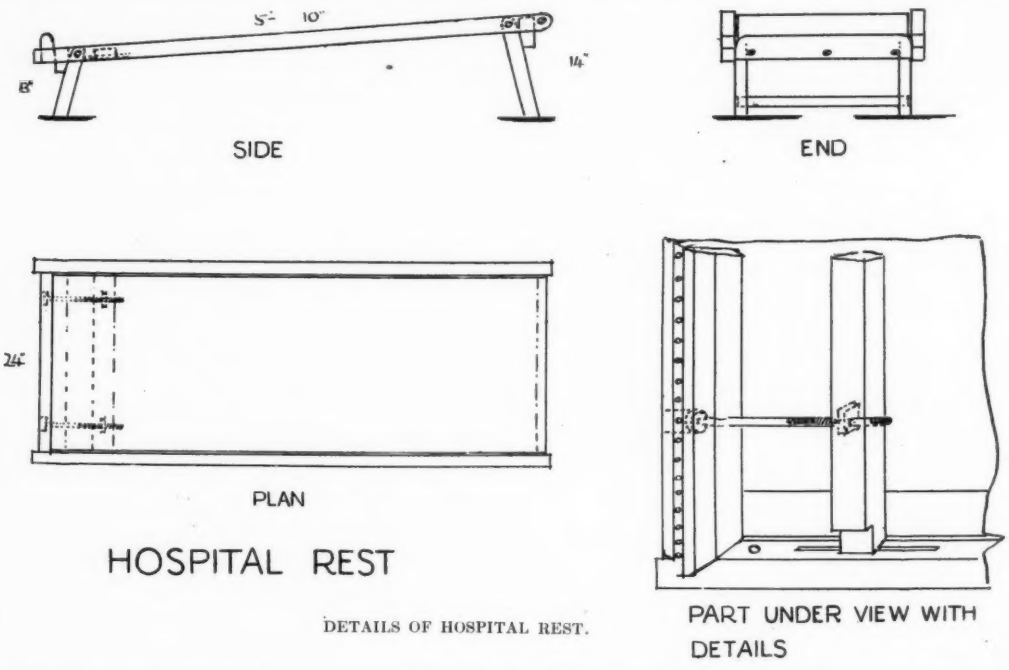
John Y. Dunlop, Esq., Greenfield, Tollcross, Glasgow, Scotland

THE present age is one of rapid progress and of changes in every field. There is scarcely an occupation or a form of human activity in the British Isles which has not been transformed or re-created since the eventful August of 1914. The story of industrial, scientific and educational change under the stress of war has been so marked that it may be doubted whether the men and women who are responsible for it even realize it themselves.

Manual arts in the English schools are no less useful today than they were formerly. Previous to the war, the most practical activities in the large centers were in the direction of making articles for the use of the schools. Since the beginning of the war, the older boys and girls have done much to provide appliances and useful articles for the hospitals and one has only to refer to the reports of the various Red Cross centers to learn the scope and value of these activities. Thruout the British Isles the woodworking classes above the first-year courses are devoting their entire time to the making of articles required in the hospitals and I think I am quite safe in saying that these efforts are sufficient to meet the demands of the hospitals. The comments on the standard of the work as discussed in the reports indicate that the materials are very satisfactory. The schools manufacture directly, under the supervision of the Red Cross Society, and the articles are handled thru the distributing centers of the various districts. The following will give a clue to the character of the articles which are being made.

Hospital Rest.

The hospital rest shown in the accompanying sketch consists of a frame, having a folding leg on which a canvas material has been stretched. Under the canvas are stretched six strips of No. 14 English web as supports for the frame. This makes the surface more comfortable for a rest. The side frames are mortised to receive the cross rails, which also form the stoppers for the folding legs. The foot rail at the bottom is raised above the surface of the canvas to prevent the recliner from sliding down. Notches are provided so that the rest may be adapted to the position desired. At the top there is only one cross rail while at the bottom there are three—the two previously described and a stretcher rail. The latter is connected to the outer frame by a tenon, moving in a slot, which allows the rail to move nearer the bottom of the rest. The rail is held in position by two bolts which pass thru the bottom rail. When the canvas is tacked at the top and bottom ends, it is also stretched across this rail. After the rest has been in use for some time and the surface sags, the stretcher rail is drawn nearer the bottom and the canvas is tightened up. The legs of the supports are made to fold up underneath the frame of the rest. This is a decided advantage when used for storing such equipment. After the framing is completed and the bed screws fixing the stretcher rail are in position, the piece is given a coat of stain, after which the webbing and canvasing are finished.

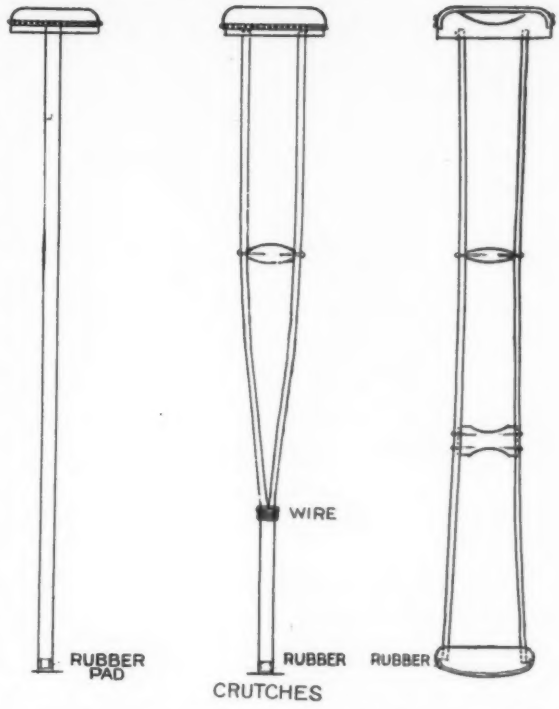


DETAILS OF HOSPITAL REST.

Crutches.

In crutch making many ideas are worked out, all with the intention of improving upon the design and making the crutches more useful. Very few of the single pole crutches are being made in the school workshops at present. All seem to prefer the second pattern in the sketch as the type for boys to make. Usually the material for the supports is $1\frac{3}{4}$ inches square. There is great rivalry among the boys in the work of squaring the material, knocking it into octagon shape and rounding it. The pole is then sanded and cut down the middle to one-fourth of its length from the end. The sawed inner surfaces are finished with a file and the corners are rounded and sanded. The tops are then provided with a short dowel $\frac{1}{2}$ inch in diameter and $\frac{3}{4}$ of an inch long. The sides are bored for the hand grip. There is considerable difficulty in setting the grip to suit the various lengths of arms of the patients. To overcome this several holes are bored in each crutch so that the grip can be adjusted easily by shifting the screw fastening. The head of the crutch is made of a solid piece of wood $1\frac{3}{4}$ inches by 2 inches, which is socketed for the dowels formed on the ends of the pole. The parts of the crutch are then fitted together, the head is glued in position and the hand grip screwed thru the sides into the end of the handle. The piece is well sanded and given a stain, the head is upholstered and the work is completed.

A third type of crutch shown in the illustration, is also very much in demand and has been made by a number of schools. It is more difficult to fix the parts of the frame together. The head, which is a piece of double canvas strung across the shaped piece of wood, requires more careful fixing as the downward pressure of the patient is thrown on the suspended piece of canvas, and carelessness in construction will lead to the collapse of the head. The rubber strip

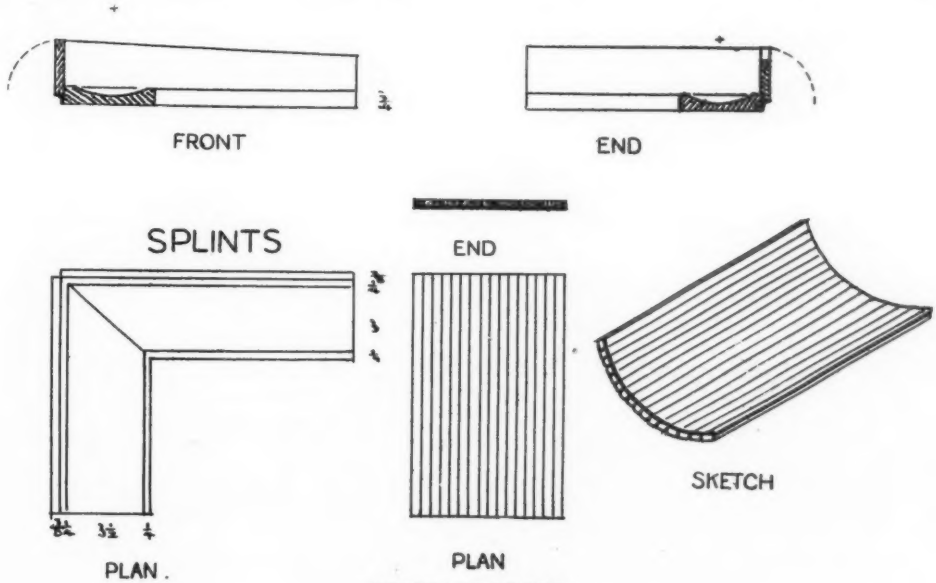


CRUTCHES

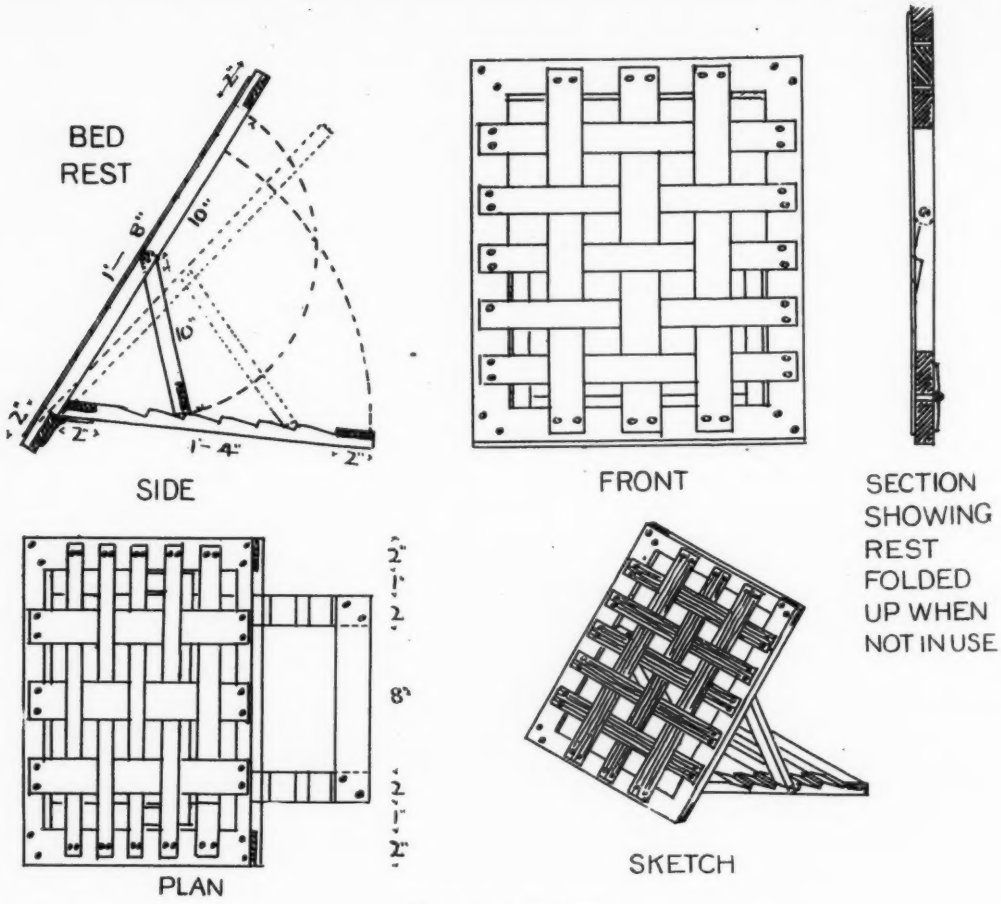
at the bottom adds very much to the cost of the crutch. As it is included in the free material given out by the school boards, the cost is an important item.

Bed Rest.

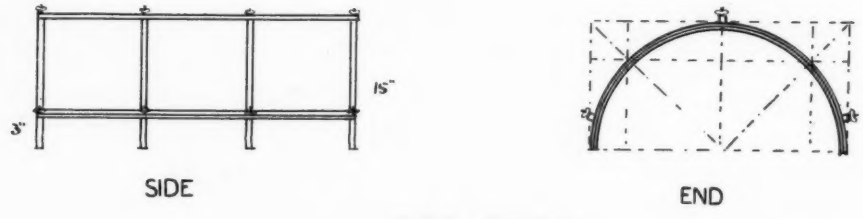
This model is a favorite with the teachers of woodworking, because it brings into use more of the simple joints taught to beginners in woodworking. Three frames are used in the construction. The outer one carries the webbing, and the two inner ones act as the angle stay and the folding adjustment, respectively. The latter has a notched surface so



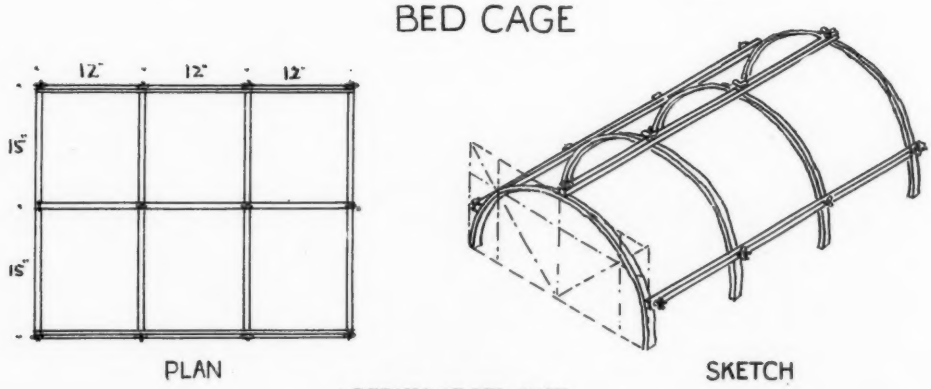
DETAILS OF SPLINTS.



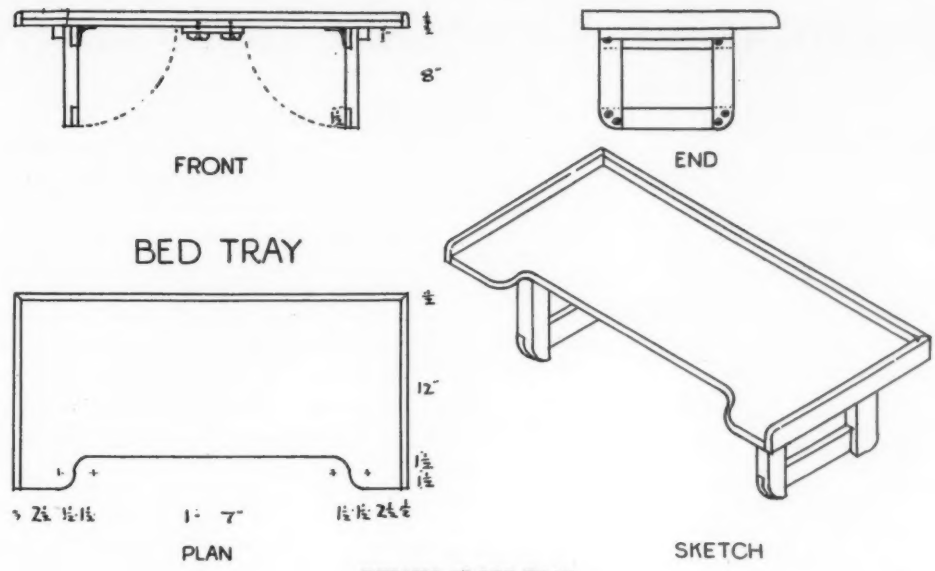
DETAILS OF BED REST.



BED CAGE



DETAILS OF BED CAGE.



DETAILS OF BED TRAY.

that varying angles of the strut give a number of easy slopes at which the rest can be set up. All the parts are so made that they can be folded up, one inside of the other. The corner joints are half-lap joints and are screwed. The joint between the stay and the main frame is pivoted on a screw fixed into the inner edge of the main frame. The inner part which folds down is hinged with a pair of 1½ inch back flaps. The face of the bed rest is formed with five horizontal strips of one and three-quarter-inch English webbing, while three strips are placed vertically. In each case the woodwork is stained and varnished before the webbing is stretched and tacked in position.

Bed Table.

The bed table illustrated is made of ½-inch panel wood and ⅞-inch leg frames. The top part is shaped on the front while the ends and remaining edge have a projecting head attached. On the underside are two 1-inch square fillets to prevent the tops from warping. These fillets also act as stoppers for the legs. The legs are made of 1¼-inch pieces, ⅞ of an inch thick, with ⅜-inch rails. The rails are notched in flush with the legs and are glued and screwed at the joints. One-inch back flap hinges are used for the hinging of the legs, which, when folded up, are held in position with wood twin buckles.

Bed Cage.

These light frames are used in cases where the bed clothes must be kept off the limbs and body of the patient. They are made of light wood ribs about ⅝ of an inch square. The ribs are built in three thicknesses and are bent to form a circle, glued and screwed together. After the glue has hardened, they are taken off the blocks as they retain their shape quite well. The rails which connect the ribs are slightly notched at their junction with the circle rib. This is done by passing a brass thumb screw bolt thru the two thicknesses.

Splints.

Many of the first-year classes are devoting much of their time to the making and planning of simple splints. The more advanced designs are taken up by second-year pupils. Work of this type varies very much according to the ideas of the medical officer in charge of the hospital. The illustrations show what is being done in one school and will give an idea of the number and variety of useful articles which are being made for the hospitals in the woodworking classes in England at the present time.

THE articles on Period Furniture by Conrad Weiffenbach and Anton Anderson will be suspended temporarily. Mr. Weiffenbach is doing some special industrial work on account of the war and his collaboration with Mr. Anderson is temporarily impossible. The articles will be resumed as soon as Mr. Weiffenbach's special war work has been completed.

DECORATIVE PROCESSES IN POTTERY

W. G. Whitford

II. INLAY MAT.

INASMUCH as the glaze adds the final texture, color and fundamental value to a piece of pottery, this must be considered of as much artistic importance as the design and proportions of the piece.

No matter how beautiful the modeled piece may be, you cannot expect it to come from the kiln with beautiful gloss and texture and refined color unless you have glazes that you know, from careful experimentation, will produce these results. Far too many beginners in pottery have a hallucination that there is a certain mysterious something about the kiln and its glowing red heat that will transform any haphazard attempt into a vase of Rookwood charm. For the student of this type experience is a sagacious instructor.

Glaze work must be founded upon a systematic method of procedure, backed by careful study and painstaking experimentation. The following problems will outline briefly a method of producing a wide range of colored glazes to be used for polychrome or inlay work.

The basic glazes given in Table 3 (last article) are of maximum color strength for good working conditions with the temperature and coloring oxides employed. They will not be pleasing colors in all cases, for their purpose is to present to the potter a palette of strong colors from which to begin his experimental work. These glazes can be blended much as you would mix oil paints, but as all glazes are of nearly the same color before firing, requiring the heat of the kiln to bring out the color, mixing in this manner is very problematical. It is necessary for accurate data to adopt a system of experimentation which permits of exact duplication of results.

For the following suggestions for experimental work, it is assumed that the basic glazes have been dried and are to be weighed in this condition.

I. Series to Produce Blue-Greens.

A study of the color effect of combining cobalt and copper oxide.

	1		2		3		4		5	
	%	Gms.	%	Gms.	%	Gms.	%	Gms.	%	Gms.
Glaze (B) (Blue) Equivalent weight 311.7	9	28.05	7	21.8	5	15.6	3	9.3	1	3.1
Glaze (C) (Green) Equivalent weight 299.1	1	2.9	3	8.9	5	14.9	7	20.9	9	26.9
	10		10		10		10		10	

The basic glazes are indicated by letters of the alphabet, the blends by numerals. The equivalent weight of the basic glazes is the total batch weight given in Table 3 (last article). The per cent column must always add up to ten. To obtain the weight in grams, the equivalent weight of each glaze is multiplied by the per cent used in the blend. The procedure for blend No. 1 would be, Glaze (B), .9x311.7=280.5; Glaze (C), .1x299.1=29.9. As only a small quantity of the blend is needed for the trial, these amounts are divided by ten, and can be further divided to save glaze, if this supplies more than is required for the test pieces. The two glazes must be carefully ground together upon a glass slab with a spatula and a little water. This blend is then applied to the biscuit tile with the spatula. The glaze should be at least $\frac{1}{8}$ of an inch thick for good texture. The bottoms and sides of the trials must be cleaned and each one properly marked with a dark underglaze color. A good mineral paint for this purpose can be made by thoroly mixing two parts of cobalt oxide, one part of manganese carbonate and one part of calcined clay.

Combinations of several glazes can be used in a series at the will of the experimenter, but in all cases the per cent column must add up to ten.

An easy method of producing a large number of good colors is to run a series of experiments, in each of which one of the basic glazes will be dominant with combinations of other basic glazes in smaller per cents.

The following series will produce a number of very pleasing blues. By various combinations of the basic glazes given in Table 3 the ingenious investigator will be able to produce several hundred glazes of good color from which to make selections for glaze painting and inlay work.

II. Series Introducing Blue as the Principal Color.

	Equivalent Weight	6		7		8		9		10	
		%	Gms.	%	Gms.	%	Gms.	%	Gms.	%	Gms.
Glaze (B) (Blue) ..	311.7	6	18.7	6	18.7	6	18.7	5	15.5	5	15.5
Glaze (C) (Green).	299.1	2	5.9	1	2.9	1	2.9	2	5.9	1	2.9
Glaze (I) (Brown)	339.2	1	3.4	2	6.7	1	3.4	1	3.4	1	3.4
Glaze (E) (Gray) .	315.7	1	3.1	1	3.1	2	6.3	2	6.3	3	9.4
		10		10		10		10		10	

In all series care should be taken that there is enough variation in the combinations to prevent too much duplication of results.

Good grays can be obtained by using glaze E as the dominant member. The hue of the resulting gray will depend upon the color of the glazes used in the combinations. Tints can be obtained by using glaze A as the dominant member. Good shades will be produced by using either glaze I or E as the principal color. For the tints about seven per cent of the white glaze should be used. For the shades not more than five per cent of the basic glaze need be used because the strength of these darker glazes tends to deaden the other colors.

This method of experimentation offers the advantage of a wide range of colored glazes from which the formula and batch weight is easily figured. For example, the formula of Glaze 3, Series I, would consist of .5 of Glaze (B) and .5 of Glaze (C). Each item of the formula of Glaze (B) would be multiplied by .5 and each item of the formula of Glaze (C) would

Fig. 13. Examples of Inlay Mat Decoration. College of Education, University of Chicago.

be multiplied by .5. This result would then be combined and would give:

CoO .015	Al_2O_3	SiO_2
CuO .050		1.5
PbO .485	.35	
CaO .250		
K_2O .200		
1.000		

the formula for Glaze 3, Series I. The batch weight would be figured as formerly. The formula for any glaze of any of the series can be obtained by the same method.

The formula and batch weight of the best glazes of each series should be obtained and these glazes made up in large quantities for permanent use. In all cases gum should be added to the glaze for ease of handling.

Inlay mat or polychrome decoration is always applied to the biscuit or once fired ware. This type of ornamentation can be developed in two ways. First, by glazing the piece all over with the body glaze

Fig. 14. Applied design executed by the Inlay Mat Process. College of Education, University of Chicago.

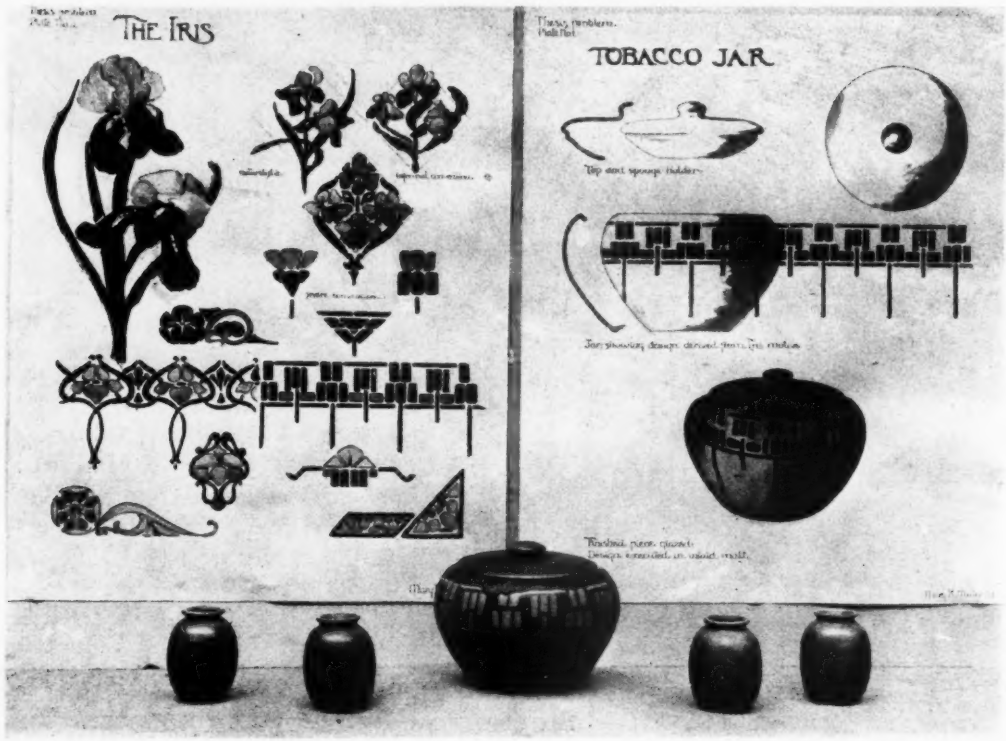


Fig. 15. Thesis Problems in Applied Arts. Design executed by the Inlay Mat Process.

or color, then when the glaze is dry enough so the piece can be handled, the design in outline, is traced upon the glaze surface. The body glaze is then cut away where the decoration is to appear. Care must be observed that the cutting tool is always held at an angle so any chipping of the glaze will occur inside the area to be removed. A small pen-knife is the best tool for this purpose. When the design has been cut and all of the glaze removed within the traced area, any ragged edges or chipped places should be touched up with the original glaze. The colored glazes called for in the design must now be painted in with a pointed brush. The glazes to be painted should be of a thin creamy condition and should be "floated," rather than painted, upon their respective positions on the piece. Considerable practice is necessary to float a glaze evenly upon the porous pottery body even over a small area. A mat glaze should always be about one-eighth of an inch thick. Some experimenting will be necessary to master the knack of applying the glaze evenly with a brush.

This method requires great skill and patience, but results in a pleasing type of ornamental effect impossible to obtain by any commercial process. The tiles with the grape design, Fig. 13, and the tobacco jar, Fig. 15, are decorated by this method. This is the true inlay mat process.

The second method is an easier one and more suited to high school work. In this case the design is traced or modeled upon the piece before it is fired, exactly as described in the process of incising. The piece is then fired to the biscuit condition. The glaze can be applied by dipping, cutting out and inlaying as described above, and illustrated by the vase in Fig. 14, and the bowls in Fig. 13, or the various glazes may all be painted upon the piece with a brush as in the case of the tiles, tobacco jar and small stamp box shown in the illustrations. This is the better method for small pieces or in instances where the design is so cut up as to make it difficult to remove the necessary portions of body glaze.

Good effects are often obtained by painting the incised lines with a glaze of darker tone than those of the color scheme, as illustrated by the tobacco jar, Fig. 14. The color schemes and designs for the pieces to be decorated by the inlay mat process should be worked out in the design class during the study of color harmony and composition, or suitable colors can be selected from the glaze trials and the color scheme worked out from these. In all cases the design and color scheme should be given careful consideration. Fig. 15 illustrates the ideal co-ordination between the design class and the pottery class. The tobacco jar was designed during the study of curves. The ornament was developed from a study of plant form and conventionalization. The small vase forms shown were used for glaze trials in the exercises to produce the colors called for in the design. The study of design becomes more interesting and decidedly more practical when it can be applied to an object constructed by the student and possessing both use and beauty.

A "FACTORY PLAN" PROJECT

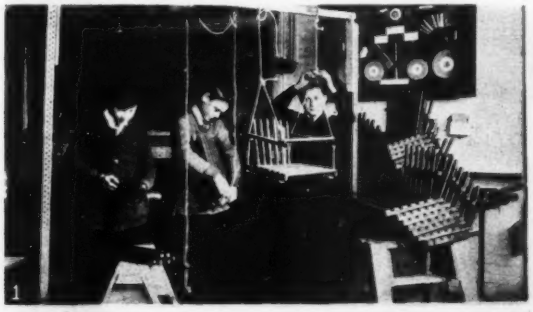
M. Norcross Stratton, Instructor of Related Work,
Fitchburg State Normal School

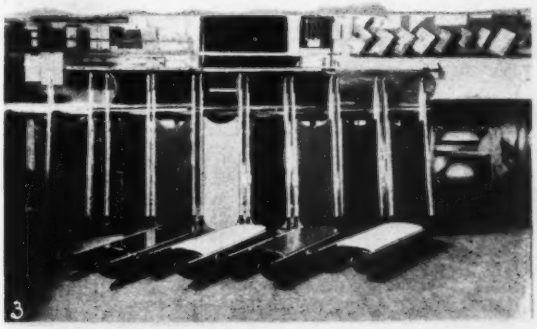
ONE of the most successful and useful projects which the writer has introduced in the Practical Arts Department is the children's porch swing. In my practical arts classes in Springfield we made several lots of swings for sale in our school store and the project always proved to be one of our "best sellers." So many visiting teachers have asked me about this project that I am describing it here in detail. The same general methods used in making the swings were used in turning out other projects, some of which are illustrated here.

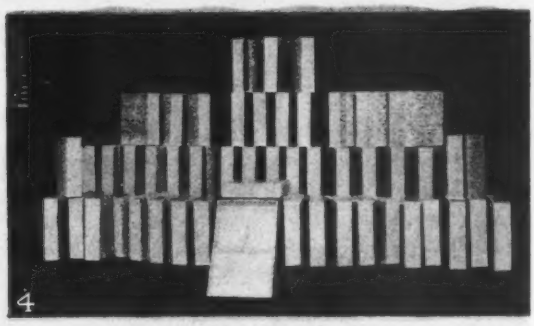
The men in the practical arts course at the normal school are now doing work along these lines and are carrying on the related work with the junior high school boys. The pictures illustrating this article and the data are from my previous work in Springfield at our pioneer practical arts department at the Chestnut Street School.

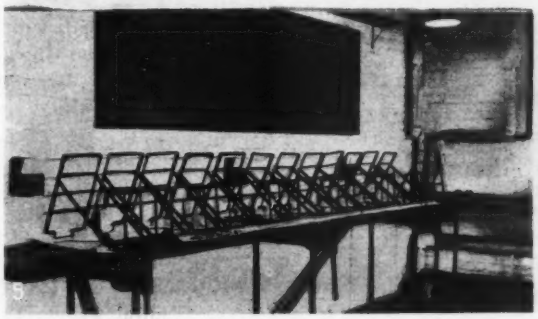
The swings were made on the factory plan, 25 swings being turned out each time. The boys were organized in groups, each group under a boy foreman, doing one particular operation but changing jobs every day or two so that each boy got a variety of experience while doing the work. To describe the manner in which the swings were made: Group one sawed the strips to length in the sawing department, from which they were taken on the trucks to the planing department, where group two planed the various parts to size in the planing jigs, which the boys themselves had previously made. These jigs are similar to those described in my article on jigs in the June, 1917, issue of *The Industrial-Arts Magazine*.

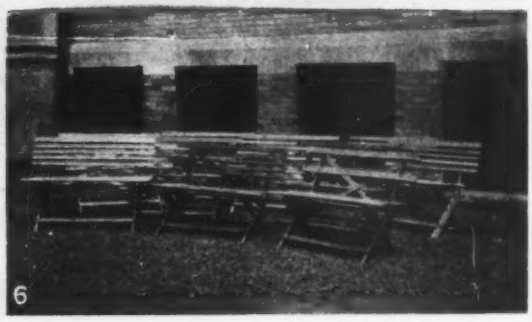
The pieces then went to the boring and bevelling department, then to the group in charge of sanding, after which the stock was neatly piled on the assembling bench. When the pieces were complete the



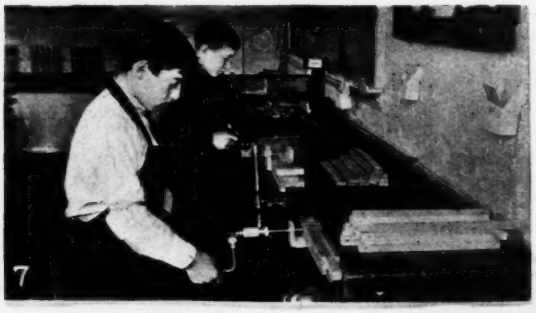


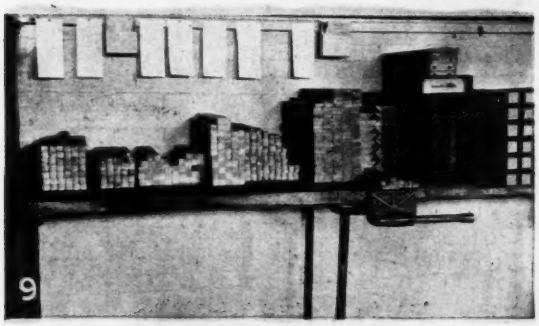


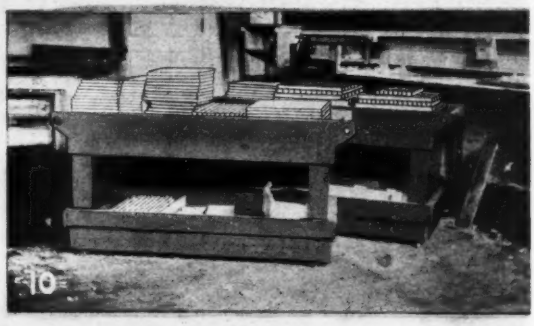




1. Roping the Swings. 2. The Completed Swings. 3. Part of a Sled Order. 4. Fifty Letter Files, factory plan.
5. Part of fifty Bundle Carriers for Bicycles. 6. A Factory Project, Settees.







7. Boring and sawing Swing Parts. 8. Rounding Ends on Handles and Sandpapering. 9. Stock ready to assemble. 10. Truck-load of Swing Parts. 11. Assembling Swings in Jigs. 12. Painting the Swings.

boys assembled them, using jigs for this also, and we then painted and roped them. When finished they were put in the shop store ready for sale to our customers.

Before starting the job the boys figured the amount of material needed for one lot of 25 swings from the bill of material for one swing which follows:

Bill of Material for One Swing.

Back slats, 6 pieces, 12″x1″x½″ whitewood.
Seat slats, 6 pieces, 16″x1½″x1″ whitewood.
Frame pieces, 5 pieces, 16″x1″x⅞″ whitewood.
Back braces, 2 pieces, 12″x1″x⅞″ whitewood
36 3d. box nails.
2 2″ No. 10 R. H. B. screws.
24′ ⅜″ hemp rope.
Finish—Vermilion buggy paint.

The work of estimating the amount of material was done in the classroom, as was the other related work from data furnished by the shop instructor. I might add that the shop instructor discusses the work with the boys and assigns the arithmetic, language, etc., to them in the shop, where it is taken down on the related assignment sheets which are carried to the classroom where the actual work in arithmetic, language, etc., is carried out. The use of printed forms helps to systematize this work and adds to the efficiency of the department. The related work connected with the swing job is outlined below and includes the written and oral lessons carried on as the job progressed.

Arithmetic.

1. Estimating amount of material needed.
   (a) Linear feet of lumber of required widths.
   (b) Number of boards necessary.
   (c) Amount of hardware (nails, screws, etc.).
   (d) Amount of rope and paint.
2. Board feet and cost of lumber.
3. Percentage of waste.
4. Cost of hardware and finishing material.
5. Cost of swings, material only.
6. Cost of swings, material and labor.
7. Summary sheet showing cost.
8. Time cards kept by each pupil with rating at so much per hour based on men's pay.

9. Finding cost of labor from shop data.
10. Making out bills, sales slips, delivery memo's, etc.
11. Estimating selling price of swings.

Language.

1. Letters.
   (a) Asking for bids.
   (b) Ordering material—lumber, hardware, paint.
   (c) Complaints—slow delivery, poor goods.
2. Compositions.
   (a) Descriptions of swings I have seen.
   (b) Making the swing parts on the factory plan "My Part."
   (c) Describing assembling of the swings.
   (d) Describing painting of the swings.
   (e) The advantage of using jigs.
   (f) Description of the swing job.
      1. What I learned.
      2. My difficulties.
   (g) Writing ad. for the shop store.

Geography.

Study of whitewood.

Study of turpentine.

Local source of supply.

Transportation.

Where obtained.

Lantern slides on lumbering, and the manufacture of turpentine and rope were shown during this experience.

Such jobs offer a wide variety of related lessons and related work stimulates the academic work, making arithmetic, language and geography so real and vitalized that our boys were as much interested in the classroom end of the project as they were in doing the work in the shop.

The labor costs were found from data which the boys kept on the time cards in the shop. The shop clerk totals up the time cards and sends the results to the classroom for final entry on the summary sheet which shows the cost of the job.

Some of the other projects put thru in this plan were fifteen lawn settees, 50 letter filing boxes for the principal, twenty desk letter trays, several lots of sleds and go-cycles, bicycle bundle carriers, tool holders, drawer pulls, garden tools, etc., some of which are illustrated here.

The Printing Course in the Newton Vocational School

G. A. Boate, Officer in Charge of Industrial Surveys, Military Hospitals Commission, Ottawa, Can.

GENERAL Aim of Courses. It is a well known fact that our methods of manufacture have changed to such an extent within the last twenty years that it is next to impossible for a boy to enter a shop or factory and get the kind of training which enabled his father to become an all-round skilled workman, with capacity for promotion to such positions as foreman, superintendent and manager, or to gain the experience which would fit him to start a business of his own. Leading manufacturers feel that there are not enough young men who are being fitted to become the high priced skilled mechanics of the future, who if they possess native ability, together with special training and a thoro practical knowledge of industry will become foremen, superintendents and managers. Efficiency systems, bonus systems, and piece rate work have intensified the proposal that a boy entering an industry usually enters as a machine operator and remains as such, gaining great dexterity on one or more machines. The opportunity for a varied experience is predoomed by the demands of production and competition. The adult mechanic has tried to remedy this condition and seeks an open door to promotion thru evening schools, correspondence courses and even leaving the industry, the source of his livelihood, to enter some short unit day institute. These facts demonstrate to us as clearly as the handwriting on the wall the need for special industrial training of boys who are destined to enter industry. This training can be given most economically during the adolescence period, i. e., between the ages of 14 and 18 years. At this period the mind is in a formative stage, and the wage earning capacity of the boy is a minimum.

The Newton Vocational School accepts boys at the age of 14 years who have a grammar school education equivalent to about six years or more, in the following trade courses: carpentry, cabinet making, printing, interior electrical wiremen, power plant helpers, pattern-making, and machinists. The aim of the school is to give the boy such a training that at the very least, he will be able to enter the industry as an apprentice with advanced standing, and with a knowledge of machines and tools that will enable him rapidly to advance to a skilled worker.

The school day is from 8:30 to 3:15 with a twenty-minute lunch period, making a working day of six hours, three hours of which are spent in academic and related work and three of shop work.

The school is in session five days in the week, there being forty weeks in the school year, making a total of 1,200 hours, 600 of trade training and 600 of academic and related work.

The present paper covers an investigation of the course in printing, and discusses the related and academic as well as the trade training.

Referring to Chart No. 1 which shows the hours of training given in English, history, mathematics, shop design, gymnasium and music in hours per year, it will be noticed that English is given for 120 hours

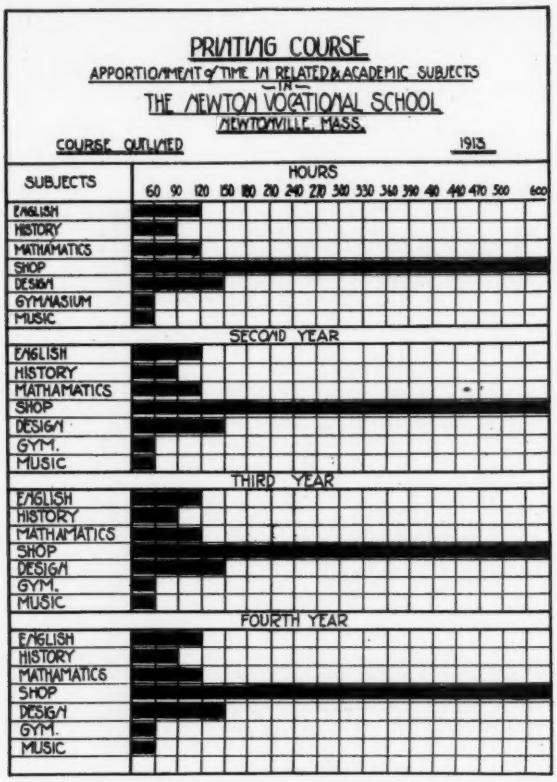


Chart 1.

during each year or 480 hours during the period of training.

English. The work in English given in connection with this course is correlated as closely as possible with the shop exercises. This correlation is best approximated in spelling lessons and theme writing. The spelling in the first two years gives each boy about a thousand words, dealing as far as possible with his particular kind of work. The other work of the first two years includes oral and written themes, letter writing, both social and business, oral reading and non-technical grammar. The work in the third year consists of theme reading, writing and spelling and much discussion of questions of current interest on which opportunity is given for independent study. In the fourth year, letter writing and writing of contracts and specifications, also reading of copy and proof corrections. Boys who are weak in English can hardly expect to fit themselves for a position other than that of pressman.

History, Civics and Economics. In the first year the work is designed to arouse interest in current topics. Groups of subjects are selected which deal with, (1) social and political events, (2) recreation, (3) science, (4) history, (5) hygiene. Much of the material is obtained from magazines and newspapers. In the second year the work includes community civics by the laboratory method, an investigation and study of the Newton city government, reports, rules and regulations of the different departments, as police, fire, health, street, charity, forestry, school and assessing. A brief history of political parties and city nominations and elections, precedes instruction in voting and balloting. In the third year the study of community civics is continued for the first half year, the remainder of the year is devoted to economics with special emphasis on current problems discussed in the newspapers and magazines. The fourth year is spent on the history of the United States with special emphasis on the economic conditions of the present day.

Mathematics. The aim of the mathematics in printing is to develop the ability to do accurate calculations in measuring for different styles of printing, to keep proper proportions, weights and measures, interest, discount, stock cutting, sufficient geometry for design work, also estimating and billing, machine speeds, etc., also time and cost calculations.

Design. Sizes, orders and harmony of alphabets, freehand lettering, cover design, the manufacture and manipulation of ink pigments, harmony of colors. Sufficient practical electricity is given to enable the student to understand the installation and operation of motors used in driving printing presses.

Gymnasium. Physical examination by a registered physician yearly and corrective physical exercises thru the year, during summer months on campus, and gymnasium in winter.

Music. Chorus work or boys' glee club. By the co-operation of the West Newton School of Music, piano and violin lessons may be taken in the school by students desiring instrumental instruction for 25 cents a lesson. The minimum price of each lesson if taken outside when given by the same teacher is $1.00.

Division of Shop Thru Four Years.

Chart No. 2 represents the effort of the head of the printing department, Mr. Morris Brown, a man who has had wide experience as a practical printer, foreman and operator of his own business, together with the advisory committee on printing on which are two recognized authorities in the printing industry in the city of Boston. With their co-operation the trade work in printing was analyzed or differentiated into what they considered the desirable experience of an apprentice printer. Chart No. 2 shows more clearly than words the distribution of time recommended by this committee. A brief outline would be as follows:

First year, learning cases and materials, composition, spacing, leading, emptying stick, stone proof, press proof, distribution, presswork, mechanical instruction, care of machine, assistant make ready, feeding press, design, freehand lettering.

Second year, book composition, shape of pages, leading and spacing, selection of type, running titles, extracts, foot note, cut-in and marginal notes, job compositions, spacing, leading, cutting leads, slugs,

mitering rules, distribution, make ready, locking and planing down form, preparing and applying tympan to platen press, adjusting guides and grippers, proper kind of ink, registering form to sheet, platen presswork, oiling press, care of rollers, feeding press, scoring on press, design planning and setting up of title pages, book covers, letter heads, for one or two-color work.

Third year, correcting, galleying and spacing out, verifying galleys, make up of straight matter, tabular matter, cuts, foot notes, running heads, trying pages, proofing, verifying pages, book composition, use of initials, care in justification and even spacing, correcting on galley, imposition and margins, punctuation, length of lines in headings, job composition, kinds of type, appropriateness, use of series, arrangement, balance, color, make ready, making out underlay, cutting and applying underlays and overlays, setting fountains for proper color, mixing colors, presswork platen, mechanism of press, adjusting impression of platen, book and commercial work, half tone work, design, color printing problems.

Fourth year, imposition, foundry forms, squaring forms, testing forms, plates, scoring rules, planing forms, tabular composition, box heads, tables, references, foot notes, inserting rules, spacing, leading, advertising composition, general principles of display, value of contrasts, displaying too many features, use of white space as a background, the margins, indenting, methods of using borders, display headings, principles of space proportion, cutting paper, mechanism of machine, how to set knife, use of slide and back gauge, platen press, general book and job work, mixing printing ink, knowledge and use of varnishes and oils, design, color, printing problems in opposite and complementary colors.

In the shop the student is given fundamental and general instruction in printing office work. He gains an appreciation of typography in its entirety. The student works under regular shop methods in all branches of the trade which are systematically arranged so that he can readily grasp their relative importance.

This department does practically all of the printing required by the 22 grammar schools and three high schools of the city. This work offers a wide range of practical experience. The shop is especially well lighted and pleasantly located in the north wing of the technical high school building. The equipment is thoroly up-to-date and includes five job presses of various makes, Roman and display types of various sizes, a 30-inch paper cutter, stapling machine and the usual furniture of a printing office.

All orders for printing must be made out on a regular requisition which must be approved by the director of the school. The school office duplicate job cards are made out by a clerk and sent to the head of the printing department.

Job order numbers are progressive and are

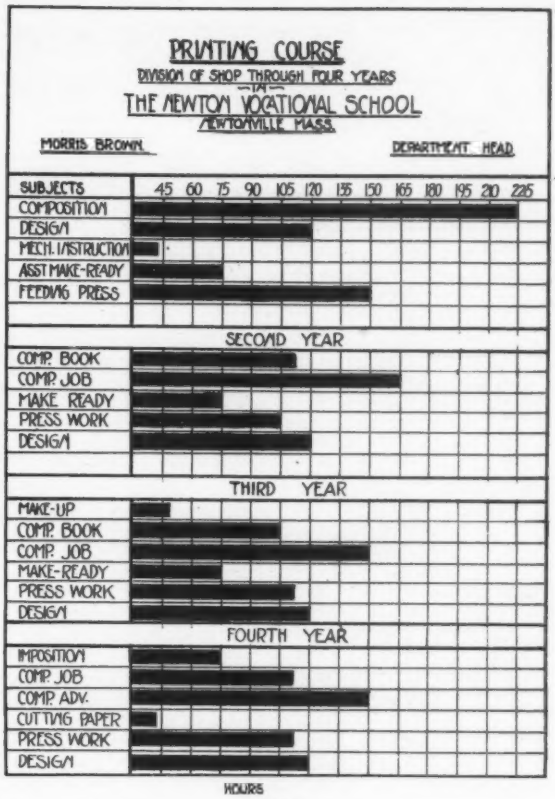


Chart 2.

numbered decimally; for instance, printing numbers are from 160.1 to 160.375 and so forth. Accepted proof sheets are enclosed in 8½x11 envelopes which are printed on the front to show the job record, job number, requested by, no. regd. stock, date, compositor, pressman, time and cost. These envelopes are kept in a vertical file for reference by the department head. Weekly time cards are kept by each workman and are entered by the instructor at the end of each week on trade record cards. Each boy has a separate trade record, similar to Chart No. 3 except that hours take the place of the name of the boy as in Chart No. 3.

At the end of each month a job record sheet is filed in the system office by the department head. This record shows the productiveness of the department from a commercial standpoint. All jobs done for the school are charged to the department ordering the work at standard prices.

Chart No. 2 attempts to outline the kind and amount of training which an apprentice printer should have and Chart No. 3 shows the amount of training which the boys in this department actually received during the school year 1914-1915.

The study of the trade record cards was made in order to justify their existence in relation to the following demands:

1. What use are they to the boy?
2. What use are they to the school?
3. What use are they to the industry?

MASTER TRADE RECORD SHEET OF THE PRINTING DEPARTMENT

NEWTON VOCATIONAL SCHOOL NEWTONVILLE, MASS.

GROUPS			BACKLEY, AG.	CONWAY, R.	CLARK, O.	CARTER, L.	LASSET, G.	EARLEY, L.	DEVONALD, W.	QUINN, F.	REACH, L.	PAINTER, W.	PARK, A.	RYAN, A.	SHELMAN, S.	WHELAN, J.	WHELAN, J.	FENNEY, F.	CORBET, G.	ROBERTS, A.	ROBERTS, A.	ZEBIAK	POWERS	HEWITT	KING, JO.	NETTILLE, L.	PATCHSON	TROTT, AS.	PALMER, G.	THOMPSON	RYCE, JO.	WILSON, R.	DANNION, C.	SHEEHY, M.	STANTON, E.			
COMPOSITION	1	BOOK	122	125	38	16	84	120	62	139	92	104	46	75		125	204	245	54	160	35	71	55	90	32	45	45	63	40	75	32	35	83	26	88			
	2	STRAIGHT	84	95	91	83	80	83	62	98	206	55	92			100	83	65	39	102																		
	3	JOB	12	51	3		30	35	24	11		60	30	15		13	19	45	56		24	05	35	28	00	23	00	23	15	35	14	40	20	28			
	4	"																																			
	5	TABULAR																5		10	5		3	25	7	15	28		10	7	13	5	30	10	14			
	6	MAKE UP																	1	10	10		23	2			12	29	62		13	18		3	5			
DISTRIBUTION	1	BOOK	35	45	50	41	39	55	50	46	45	24	40	29		35	50	29	30	13	3	14	15	12	33	5	13	4	15	4	29	2		20	24			
	2	JOB	33	2	12		2	26	25	20	20	11	3			10	4	3	5	2	34	34	48	23	22	27	18	23		11	20	23	9	39	30			
	3	TABULAR																5				5			4	1	23	1		15	3		2	5	4			
PRESS WORK	1	MAKE READY		11			20	2	2	1		30	5			2	11	37	6	47	64	41	15	32	19	35	30	30	36	33	17	25	12	66	29	22		
	2	FEEDING	85	70	70	20	41	10	74	30		130	80			55	52	15	63	72	04	60	40	20	57	80	10	59	14	90	27	40	22	40	73			
	3	PRESS																																			
	4	COLOR WORK					9					2						5			17				1			19	10		2		5				
	5	RULING																	8				3	3	1												
	6	PERFORATING																			11	3							2								
	7	NUMBERING																						1	5												
	8	SLIP SHEETING	29	3	2	3	10	13	10	7	7	13	7			10	14	6		2	9	7	2	11	9	7	12	8	6	1	18	4		4	8			
IMPOSITION					3		6					10	11					10		5		5			44		2	15					11	6			
FOLDING						13			12		2		3			2	10	3	3	3		5		11	22	7	11	9	14		10		5	5	1	20		
STITCHING																					20	3	4	5	10	8		24			3		6		2		
PADDING																										3											
PAPER CUTTING							1	3		1		1	6				1	5			39	7	5	24	7	38	2	7	12	23		10	21	40	5	22		
DESIGN	1	PLAIN		1																		2				8											
	2	LETTERING	80	95	92	87	14	91	89	73	72	80	87	6	90		61	79	55	5	3																
	3	ONE COLOR		4			20											12			50	27	26	33	24	22	21	23	25	24	14	28	2	13		3	25	
	4	TWO COLORS																			20	53	62	43	57	72	53	6	7	16	63	58	15	15	29	7	60	
ESTIMATING																						2									2		26	5	27	10	1	
MISCELLANEOUS	1	STERNS SCH'L																														30					
	2	MULTOGRAPH									78																										
	3	CORRECTING																							20												
	4																																				
	5																																				
	6																																				
	7																																				

Chart 3.

feeling of confidence and be able to assign work so that the boy does not suffer by performing a certain kind of work of which he already has had his allotted amount. Over training and under training are eliminated. The maximum amount of trade training each year is 600 hours. Should the master trade record sheet show only 400 does it not seem logical that the boy owes the school 200 hours more work in that year? Chart No. 3 shows the trade work of two groups of printing boys for one year of shopwork as it was taken from the cards. The weakness shown in this sheet are the points which would never have come to the surface if the study had not been made.

(3) *The Industry.* The prospective employer may be one of the type which "has to be shown." When he is shown Chart No. 3 for one, two, three, and four years of training, and the sum of the number of hours training he will appreciate that the school has conscientiously tried to make something more than a "printer's devil" out of the boy whose fate was trusted to school.

All of these cards and charts may seem to be merely an added burden to the instructor, but with us they have come to stay and the instructors pride themselves on an absolute record and say that when fifteen boys come into a classroom they do not have to scratch their heads and hand out jobs while they last and then let the remainder of the class wait until something turns up. When a class enters, each boy goes to the card rack and takes out his card and instantly knows the task assigned him.

(1) *The Boy.* With such a system the boy and his parents are assured of an equalized training without danger of exploitation. The progression factor is taken care of and the jobs assigned him are consistent with his ability to perform them. The step from the school to the demands of a productive commercial shop is bridged and the boy enters trade work with confidence.

(2) *The School.* Has absolute records of trade training as a proof of the practical instruction given, by which it may measure the boy's ability to do certain kinds of work, as a unit or to be compared with other boys of the same group. If an instructor leaves or is ill his successor may take up the classwork with a

It will be seen that the academic work correlates very closely with the practical work, but it is sufficiently broad in scope so that boys are not only educated industrially but are educated also to go out of the school as intelligent citizens. We believe that every graduate of our school has three distinct duties to fulfil: First, he should be a skilled worker in a

particular trade or vocation; second, he should be able to decide with intelligence on civic questions; third, he should know how to devote to the best of his advantage his spare time towards self-improvement.

The aim of the school is to give the work in as broad a way as possible and to approximate the commercial shop as nearly as school conditions will permit. In order to carry on individual instruction it is necessary that the number of the pupils in a class does not exceed fifteen. A superficial analysis of the cost of vocational education per pupil seems out of proportion to any other form of secondary education, but we must not lose sight of the fact that in the equipment of the vocational school, owing to the fact that the instruction is individual, the duplication of machinery is unnecessary, and the school without great expense is able to keep the equipment up-to-date. If the interest of the capital *not invested in duplicated equipment* is added to the depreciation of this equipment, and the sum of these subtracted from total pupil cost, the pupil cost shrinks. Also the amount of waste due to abstract exercises is eliminated, and instead the material worked on during training is turned out into a marketable product.

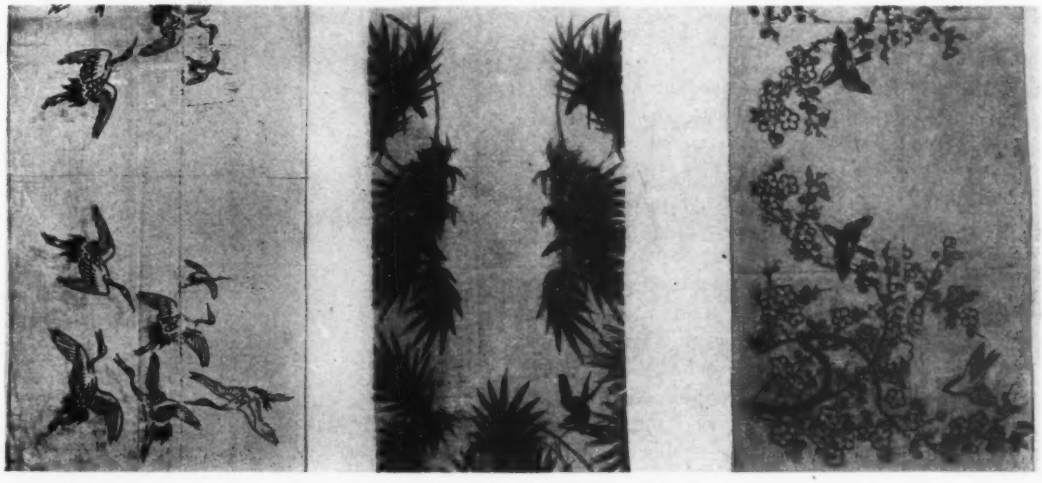
JAPANESE INFLUENCES IN INDUSTRIAL ART

T. O'Donnell, Chicago

(Concluded from December)

JAPANESE embroidery is familiar even to the casual observer as something quite beyond the pale of mere occidental effort. No fingers animated by a Caucasian mind seem to have the vivid creative force or the wonderful stamina which the appearance of the work manifests as having been necessary. This pre-supposes, of course, the same knowledge of effective spacing and correct design touched upon in preceding paragraphs. But, while we associate embroidery with the lighter feminine accomplishments, in Japan the embroidering of objects falls into the catalog of masculine endeavors. Perhaps it is just as well, for most pretentious results in Japanese embroidery represent such herculean strength of endurance with an almost infinite attention to nicety of detail that one is glad to think its execution fell within the province of a man. If we can learn anything from the Japanese in the way of embroidering it is in the complexity of result often attained by very simple means, for they can create a very vivid picture with no greater play of silken colors than the average American lady would require for a flowered doily. They are past masters in the art of suggestion.

Of late years the material known as Japanese towelling has attained quite a vogue in America. It consists of narrow strips of linen or cotton, perhaps eighteen inches wide, or thereabouts, and imprinted with block patterns of bamboo, fowl or other pleasing designs. These are done in blue usually, altho brown and a certain shade of neutral orange are favored more or less. It is in great demand among us for window shades, dresser covers, sofa pillow covers and the thousand and one other things within the range of the feminine decorative instinct. The peculiar thing about it, however, is that it is really not towelling and was never used by the Japanese for that purpose. It served its purpose originally as a head binding for the laborer. Now, of course, it finds a very ready market here and in European countries. But we who have seen the laborer behind his plow, plodding along in the heat of a summer afternoon, the turkey bandanna on his head accentuating the vivid hotness in



A. B. C.

A. B. and C. Japanese Toweling. Printed in blue on white cotton cloth, from wooden blocks. While intended as a head-binding for the laborer in the rice fields of Japan, it is much in demand by the housewife, who appreciates its artistic utility for various uses about the house. A. and C. have been hemstitched for use as dresser covers.

A. Antique Kutani ware. A bold pattern in purple and green on a yellowish ground, with relief decoration. B. Modern Sumida ware. Fern bowl in glazed reddish brown and dull green, with relief figures. Attractive, but not important artistically. C. Decorated Satsuma ware. Tea caddy, on teakwood base. D. White Satsuma Vase. E. Cloisonne. Incense burner with cherry blossom pattern on a bluish black ground. F. Portrait of an actress. Wood cut after a design by Toyokuni, a representative artist of the Ukiyo-ye school. Correctly framed after the Japanese fashion.

the air, cannot but marvel at an industrial art which extended its influence to the farthest sinews of a people and made even the sweat band of the toiler a thing of very real beauty. The printing of this material was formerly done from wooden blocks; certain modern methods have been introduced which facilitate manufacture more than they do the artistic effect. But the lesson for us lies in endeavoring to apply something of the same quality to the textiles which go into the humblest huts of the poor and touch every activity of their daily life; textile stuffs which not only fulfill their purpose by wearing well but which convey the same relative pleasure of ownership as her brocades would to a fine lady.

It is easy to choose coarse cotton or linen cloth and treat it for stencilling after the Japanese method. Imagine a motif developed from our own weeping willow, and, as in the case of the Japanese towelling just mentioned, developed into a window curtain. Onto the ordinary window *shade* stencil a flight of wild geese and a wisp of cloud. Pull your window shade to the dividing line of the lower and upper sash. Arrange your stencilled geese in a manner which will dispose of them effectively in this arrangement or when the shade is pulled low. What have you? An artistic and pleasing window picture, even if you looked out into a breezeless and musty court or into a back yard littered with rubbish. Where we stop with seeming essentials, the Japanese venture farther into the more pleasing non-essentials. It is all in the point of view.

Keramics.

Japan has not influenced our pottery to any notable degree, nor in any important detail which would make us less proud of our own accomplishments in this branch of industrial art. The Japanese potter has succeeded most when he attempted least in decoration. Nothing is lovelier, for instance, than perfect Satsuma, a creamy white ware with an infinity of cracking over the entire surface. In its design and in all their pottery designs, the Japanese exhibit a taste for form which is on a par with that of the ancient Greeks. Their applied decoration in nearly every case has a tendency to run to floridness and highly involved and time taking patterns, and pottery of any kind or description is really without an excuse for too much decoration. One feels that if it has to be done, it were better on a more permanently non-breakable material. But where constraint has been exercised the same beauty of arrangement and design which has characterized other departments of their artistic endeavor is evident.

One ventures the statement, at the risk of breaking many idols, that the so-called Japanese ware proudly treasured in many a household and exhibiting a greater multitude of lackadaisical ladies and gentlemen in red kimonos than one could find in the Flowery Kingdom itself, is hardly worth the name

A. B. C.

A. Electric floor lamp. The shade is made of embroidered kimono sashes. The design is a gold embroidered dragon on a purplish black silk. The base is black, with laquer decoration in gold. B. Electric table lamp. Silk embroidered shade, blue birds and yellow leaves on white silk, with dark gold braid trimming. The standard is a bronze candlestick, with blue and yellow cloisonne panels. C. Figured golden silk shade, with cedar frame and rattan panels. This utilizes a vase of plain white Satsuma. A teakwood base adds to the finished effect. The most inexpensive, but quite the most effective of the three. Tabourettes are of carved teakwood.

or the fame it enjoys. It is more of an American excresence than anything else and conveys an absolutely wrong impression of their keramic proficiency. They have made and still continue to make exquisitely decorated china which in some cases is beyond comparison with French or English china of the best quality, but unusually fragile. Nevertheless its lightness and gracefulness is the despair of American manufacturers. Perhaps we are too impatient of results; Japan certainly has no better clays than we have. But they seem to possess an all-pervading facility for developing the best in anything they turn a hand to. In many a Japanese household you will be offered tea in exquisite cups made of lacquered orange peel. 'How foolish, and what a silly thing to make a cup of!" you may perhaps exclaim. Yet, after all, it is a question of initiative. The American pottery manufacturer lacks real initiative. Perhaps some obscure instructor in industrial art, puzzling some day over ordinary neighborhood clay with his confreres of lesser age, may develop the unexpected.

Queen Anne table finished in black, with gold laquer. Possibly more Chinese than Japanese in treatment.

In china decoration we seem hidebound by a respect for ordered detail and stiff, conventional ornament. Perhaps we like it because it seems in a way a reflection of our manner of thinking, which abhors the unconventional. But one feels that a little more freedom after the Japanese fashion would be productive of results equally pleasing and, who can tell, develop into a more flexible and meaningful school of designing.

One would never expect to find Japanese thought exercising an influence on such an ultra modern development as the electric lamp. Yet it has and the result is immeasurably pleasing. Your Japanese craftsman takes his native bamboo, or cedar from a dead log on the shore, and works it into framework for a lamp shade which rivals anything similar for artistic effectiveness. Equipped with silk of a color matching or setting off the Japanese vase which forms the lamp base it gives a lighting vehicle which is highly pleasing. In its construction simple, it offers play to the talents of anyone handy at all with their fingers.

Other lamps, more decorative but not quite as useful from the lighting standpoint, are those in which the shades utilize the wonderful Japanese embroideries. In shape they are not quite as severe as the style described in the foregoing paragraph. Built on a wire framework they lend themselves to a variety of shapes, even to the curving upwards at the corners which distinguishes the gables of a Japanese roof. These lamps are ideal for many purposes—den lighting, piano lighting and so on—and by reason of the range of materials available, such as the embroidered squares primarily intended for pillow tops, or the ends of kimono sashes, may be developed to the last word in exotic luxuriousness.

A design for a table. Rectangular top and sides. The Japanese touch is furnished by the red lacquered circular panel at each end and the style of floor rest. Without these details of finish and design it might pass for what is termed "Mission" style. This proves that design, to be effective, must be fundamentally correct and conform to certain well established principles.

Cloisonne and relief designs are two ramifications of the Japanese potter's art which are outside the range of an article of this nature, as they represent an advanced stage of workmanship hardly ever reached in the regular routine of classwork. The first mentioned method is not strictly Japanese as to origin altho rendering itself admirably to their man-

A. and B. Japanese "Peacock" chair and hour-glass table of woven bamboo. C. Fern basket of bamboo. D. Lunch basket, with circular trays, of bamboo and rushes. This is finished with gaily painted scenes in gold, blue, vermilion and green, and combines beauty with utility.

ner of ornament. The latter method contemplates applied figures in relief and some of the effects are wonderful to a degree passing comprehension.

The teak wood bases, often intricately and beautifully carved, which the Japanese consider an indispensable adjunct to their pottery, set off the general effect in much the same way a frame sets off a picture. They seem to be keyed to oriental *motifs* only; used in conjunction with the pottery of the European school they fail of their artistic effect.

Our Debt to the Japanese Printers.

Long before Marco Polo introduced printing from wooden blocks into Europe from China, the Japanese priesthood fostered the making of prints by impressions from carved wooden blocks. To this day, and regardless of the wonderful advances made in the art of printing from stone, zinc and copper, the Japanese wood engraver is supreme in skill and in excellence of his work. As has been mentioned in connection with other products of Japanese craftsmen, the designs were made by artists. In the transferring of these designs to the wooden blocks, however, the printing craftsman displayed a resourcefulness, ingenuity and good taste second only to that of the artist himself. In fact, he was considered practically on a par with the artist, and his mark, monogram or symbol occupied as prominent a place in the finished print as the signature of the artist.

Without their perfection in the art, it is undeniable that a great share of what we now know as Japanese workmanship would not have existed, either in the form of Ukiyo-ye—series of prints mirroring the daily life of Japan—or printed stuffs in silk, cotton and linen. In conjunction with the latter materials, the printers secured results difficult to distinguish from hand painting. (The same applied to stencilling, whether in connection with the decoration of wall paper, leather or textile fabrics—a decorative method which the Japanese have used since the latter part of the seventeenth century.)

The progress of the paper industry is of course coincident with the development in the craft of wood engraving. It demanded paper with different qualities than were required for window use, for instance. Paper as we know it falls far short of even the mediocre Japanese grades, which include varieties bearing a marvelous resemblance to tortoise shell, or lightest gossamer or strong linen, which withstand wear and tear to an unbelievable extent. The scarcity of other raw materials is forcing us into fields wherein the Japanese forced paper to serve centuries ago—as a textile substitute, as a molded form (*papier mache*) suitable for a wide variety of utilitarian objects, and so on. Good Japanese paper contains that inherent impression of good workmanship which makes its handling a pleasure. Even the paper used in their windows is admirable, often being treated to an all-over decoration from wood blocks in a single neutral tint printing, and showing bamboo and pine forms, etc. A great deal of the output of several of their paper mills today is utilized in the graphic arts of our own country for catalog covers, announcements and books where the impression of finest quality is intended to be conveyed. We have yet to equal them in paper making.

We can learn a great deal from the Japanese in the way of developing our own art of printing from wooden blocks, for whatever result. From any angle at which you consider the craft, it is with us, for an old art, distinctly in embryo. Any class in industrial art could study even the simplest form of Japanese wood block printing and gain the open sesame to a pleasing and useful field which grows in fascination as one ventures further into it.

Decorative Possibilities of Japanese Lacquer Work.

We are all more or less familiar with the accepted style of Japanese lacquering on wood, *papier mache* and, sometimes, on metal. It is very beautiful, but tiresome unless well done. The best utilization of it in our own industrial art is in the lacquered ornament distinguishing decorated furniture pieces, and to which the Chippendale style lends itself particularly well. There are many ways of applying the ornament, sometimes by scratching the design on a previously lacquered surface and rubbing in with gilt, or gilding in heavy relief and lacquering over. After familiarizing one's self with the Japanese style one can produce attractive and creditable work, with scarcely any trouble except that connected with the many coats of lacquer necessary for the highest

grade of work. The effect usually seen is of gold on a black ground.

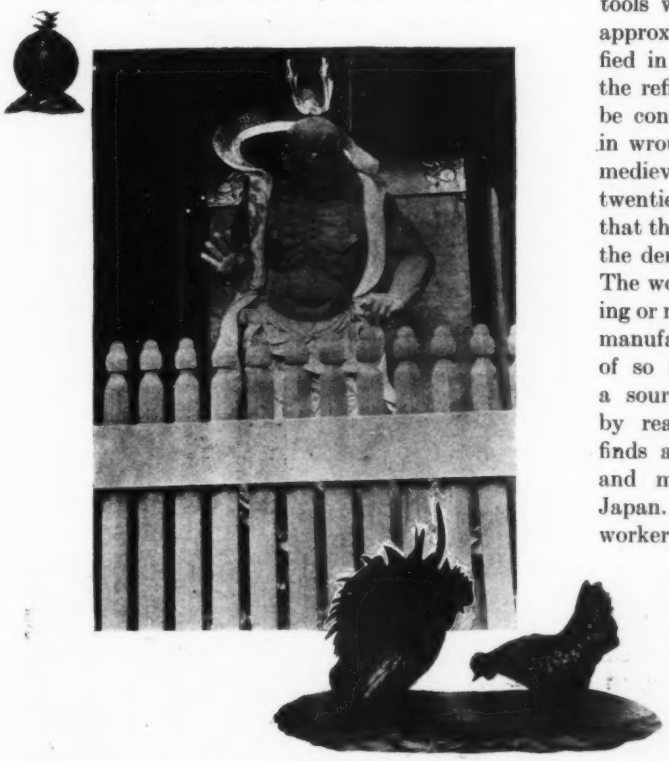
The influence of this sort of work in our own schools of furniture design is becoming increasingly noticeable. More and more one finds furniture decorated beautifully and fancifully with fruit, flower and bird forms and landscapes. It suggests a way whereby the student in furniture construction can gain in gracefulness of design by developing his talent for applied decoration on the article he has made.

One can make the Japanese idea convey itself in many ways in the construction of furniture, styles which suggest the Mission type without its cumbersomeness and which represent sufficiently simple construction to appeal to the beginner in woodworking.

Japanese Skill in Weaving—Furniture and Basketry.

We are all more or less familiar with the woven reed chair and with its numerous cousins in the furniture line; we have admired the reddish baskets woven from bamboo which of late years have descended on the country from Japan. In weaving dexterity no one is equal to the Japanese basket-maker, and the same artistic comprehension visible in the other forms of his manual art makes itself felt even in the least of these utilizations of the bamboos and rushes of his own countryside. Their work in this branch of industrial art will repay close study. The designs exhibit an airy lightness which their strength of construction contradicts, and no matter what the finished object is it is never clumsy.

The beautiful polished mahogany finish which we have come to associate with the most familiar form of their basketry work is not beyond our reach. Our own willow offers possibilities in this respect which can be utilized to advantage in any class in basket-weaving and chair-making. Dyeing and waxing enables it further to approximate the pleasing effect of the best Japanese examples.



Bronze statue of the Nioson Taki at Nikko. (Above.) A tobacco container of bronze, with relief decoration. The base represents a conventionalized wave form, and the handle for the top developes naturally from the two sea-birds on the crest. A beautiful piece. (Below.) Bronze rooster and chicken. Note the natural execution and attention to detail. This group is found in every Japanese dwelling, in some form or other, and is the Japanese emblem of the Happy Family.

The Chasing of Metal.

Countless suits of armour and swords testify to the skill of the Japanese smiths centuries ago. Representations of gods, animals and birds without number testify to their ingenuity in the working of metals. In the tempering and utilization of copper, gold, silver, tin, bronze, manganese and antimony they deserve our ungrudging admiration. Their loving craftsmanship appears in the least detail, and the fidelity of their animals and birds to the natural subjects positively uncanny, tho they hardly ever drew or modelled from the live model. Most of their work represents a stage of advanced perfection which places it out of the range of this article. But we, who have metals in abundance, and modern tools wherewith to work them, should endeavor to approximate somewhat of their skill as it is exemplified in the smaller articles which go toward making the refining influences of ordinary life. We seem to be content, in our schools, to perfect crude designs in wrought iron, or medallion reliefs, after classic or medieval models. Rarely are they imbued with a twentieth century spirit. The age will soon demand that they shall be. Industrial pressure demands it, and the demand will be forced to the least in the ranks. The world is engaged in a cataclysm which is destroying or rearranging the time honored sources for certain manufactured goods. Germany, hitherto the source of so many of the world's industrial necessities—a source which seemed to be conceded naturally by reason of her trained industrial proficiency—finds a remunerative field in scientific instruments and machinery gradually being appropriated by Japan. It stands to reason that the Japanese metal worker can bring and has brought to this work a mind well fitted for the task by reason of an ingrained talent for mechanical perfection of detail, developed for him thru centuries by ancestors equally as well trained as he, if in more artistic fields of endeavor. The finest French china, the most exquisite French perfumes and many of the daily necessities and luxuries of occidental design and origin are now being duplicated, both as to labeling and content, in a manner defying detection even by experts.

The Modernization of Japan.

This leads us to a consideration of the modernizing influences at present at work in Japan—which

View of typical Japanese interior. The sliding screens to the right open upon the garden. The tea drinking ceremony is in progress. This always follows a certain prescribed formula and is gone thru with all the formality of a ritual.

The Miyashima Shrine at Aki. Japan abounds in scenes of surpassing loveliness. Surely a spot like this must be an inspiration to its fortunate visitors.

naturally brings about a logical excuse for the termination of an article purporting to show the influence of their industrial art on our own.

The age is money mad. Japan, awake from her long sleep, alert and with her hand at the switch of power, has caught the impulse, the feverish eagerness, the tendency to degrade everything to the level of the dollar. Her eyes have mapped the track of her ships across the seas—and the ships have modern cargoes, for the ways and the methods of the Caucasian, reinforced by Oriental artfulness and adaptiveness, have entered the workshops of the Japanese and are returning work in kind. Japan looms potent with power in industry, and it is because, once she decided to cast her old ideals aside, her ancient training and proficiency in every kind of craftsmanship have served her passing well. And with her present decadent prosperity she has taken on a few undesirable traits for she has grown vain, shallow, imitative, insincere. One wonders whether she is not paying too great a price, even in the face of great prosperity, for the trifling objectivity of the West.

Of course she still bids for our favor with respect to the many forms of her industrial art that was. But a great share of what she sends us seems to be turned out as a concession to what is presumed to be the occidental demand: the treatment is flamboyant, the construction weak and superficial. One longs for evidence of the ancient aloofness, of holding to real ideals—the quiet attractiveness of the elegantly simple wares of the old potters, the monochromes and lightly tinted sketches of the early painters, the lacquer of Korin, the iron sword guards of past centuries. She is assimilating the worst we have to offer, and it is suicidal.

So, after all, it comes simply to a question of assimilation. One can assimilate intelligently, or *vice versa*. There is undoubtedly a great need for a greater appreciation for basic excellence as it affects our industrial art. The Japanese examples are worth studying. In our cosmopolitan country we can borrow what is good from all peoples. But we must distill the essential values, disregarding that which is irrevelant, adapting intelligently that which is worthy of emulation. Where the Japanese fail in their intended concessions to the western viewpoint is in not conveying their concrete assimilations of western ideas, in articles manufactured for western consumers, in modes which should convince by their sincerity. Poor assimilation of the art or industrial forms of any period or people produces work which is imitative. It does not show initiative, nor produce the virile results consequent upon applying initiative in the adaptation.

Kwanon Temple, Asakusa, Tokyo. A typical Japanese structure.

Matsushima Meisho at Sendai. The form of Japanese architecture would seem to be a natural growth from its surroundings. One of their buildings might crown the summit of the islet in this picture and be barely distinguishable from the hardy pines which would surround it.

MODERN SIGN PAINTING AND THE RUDIMENTS OF FREEHAND LETTERING

Walter A. Heberling, Mooseheart, Ill.

(Second Article)

ATTENTION is called to the simple equipment required for the lettering studio and its small cost. An adjustable table, as shown in Fig. 1, can be used for lettering almost any kind of a small sign, and it is especially adaptable to show-card lettering. A few red sable show-card brushes, assorted sizes, and the same of French camel's hair lettering brushes are needed. The camel's hair brushes should never be used in water color, but will work exceptionally well in either Japan or oil colors. One dozen of Moore's No. 1 push pins will be found very useful in fastening the material to be lettered to the lettering table. Paper clips are also good for this purpose. (See Fig. 4.) A pair of wood horses 32 inches high and about three feet long, made of 1"x4" material, can be used on which to letter board signs or signs of too large dimensions for the lettering table. A list of paint stock that will suffice for a school sign studio, for practice work, is given as follows:

12½ lb. keg of white lead ground, in oil.
1 lb. bulletin red, ground in oil.
1 lb. lamp black, ground in oil.
1 lb. Prussian blue, ground in oil.
1 lb. medium chrome yellow, ground in oil.
1 lb. lamp black, ground in Japan.
½ gallon of turpentine.
1 gallon of raw linseed oil.
1 quart Japan gold size (which is a very strong drier. A tablespoonful would be sufficient to dry a pint of lettering color).

This list would not be sufficient for a commercial studio, but the list may be added to, as the class advances. In mixing lettering color, take a small quantity of the color to be used and thin with a few drops of turpentine, adding a few drops of gold size also. Lettering colors ground in oil should be mixed to the consistency of thick cream because thin color causes the paint to "run." Under no consideration, use any ready mixed paint as some of them are loaded with oil of a questionable kind, and any of them are unsuitable for sign work. A piece of scrap glass makes a very good palette on which to work the brush after dipping it into the paint. The brush is dipped into the paint, and then drawn toward you, to make it form a flat, chisel point, which enables you to make the square corners on the letters, border lines, etc. A piece of light, hard twine is used for drawing horizontal and vertical lines and also comes handy for striking a segment of a circle. All of these operations are fully shown in Figs. 2, 3, 4, 5, 6, 7, 8. In the photographs showing these operations, it will

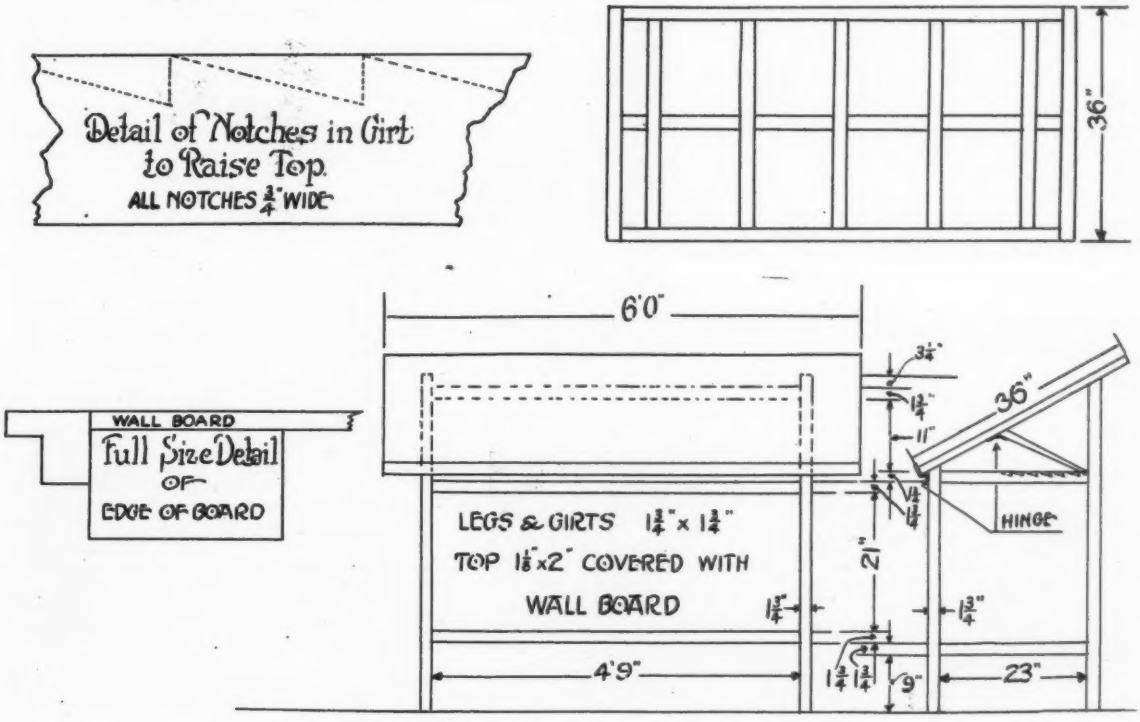


Fig. 1.

Fig. 2.

be noticed that the lines are very black. A ruling pen was used here to make the lines distinct for reproduction, instead of lead pencil, but for actual work, a lead pencil will be found the proper tool. The twine should be about 3½ feet long with a non-slipping loop at one end which is to hold the point of the lead pencil. Place the left hand so that the thumb and first finger grip the twine and the tip of the first finger slides along the edge of the table, (See Fig. 2), while the other hand holds the pencil. The string must be kept taut so as to keep the pencil running parallel with the edge of the table. Care is required to move the hands at the same speed when drawing straight lines. If the hand which slides along the edge of the table moves too slowly, it will reduce the

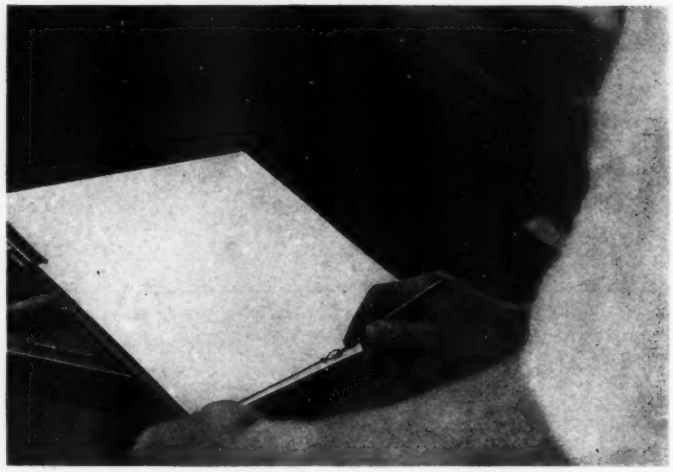


Fig. 3.

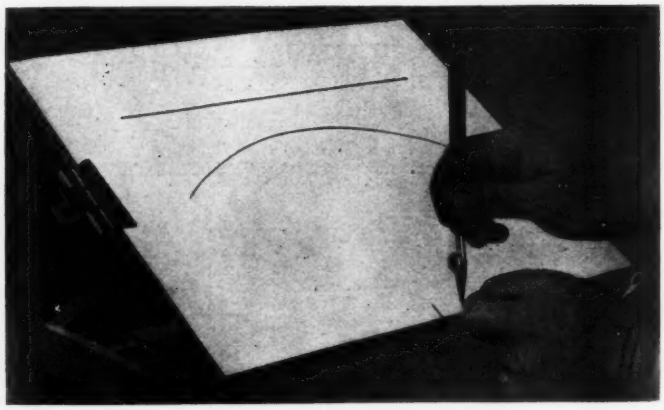


Fig. 4.

distance between the edge of the table and the point of the pencil, and the line will not be straight. Do not be discouraged at the result of your first attempt, as the writer has had the pleasure of introducing this method of layout to several good sign painters, who, at first, could not master the string, but who, later, used it exclusively. In Fig. 7, a 22″x28″ six-ply bristol board is shown, dotted, ready to receive the border lines, and the lines which will bear the inscription. (These marks should be done with lead pencil.) Notice the marks for the border line, *which are always drawn first.*

This gives the space to which the

Fig. 5.

lettering must be confined, excepting where a line of subordinate lettering can be judiciously and artistically inscribed on the border itself, remembering that not over one-third of the width of the border should constitute the height of the letter, i. e., if the border is 4″ wide, the letter should not be over 1⅓″ high. Fig. 3 shows the method by which we find the center of a card in making the segments of a circle. It will be noticed that the card is placed so as to be flush with the left hand and bottom edge of the lettering table. The string is now taken in the left hand and the pencil inserted into the loop at the end of the string. The left hand is then placed at the left edge of the card and the string drawn taut with the point of the pencil placed at a point that, the eye says, is the center of the card; keeping the pencil in the loop, and holding the pencil securely, place the pencil point against the right edge of the card and with the string stretched, make a mark on the card at the point where the left hand is holding the string. (See Fig. 4.) This will give you two marks, "A" and "B", and the eye can easily divide this small space as shown at point "X." This process can be gone thru in a second, and, once acquired, it certainly is an asset to one who takes pride in his ability to make *a quick and accurate layout.* When the center has been found, it will be well to draw a fine line the entire length of the card (see Fig. 8, dotted line) and in the center; using the left edge of the board for this vertical line the same as the bottom edge is used in making horizontal lines. This line will allow the radius to be made to your liking but if the curvature wanted would made the center point outside the dimensions of the card, proceed by laying out the right hand edge of the card to the bottom edge of the table, and make a light line across the table, beginning where the center point of the card is marked, and any place on this horizontal line (see Fig. 6) can be used as a center for the top curvature, which we will call line "CD." (See Fig. 8.) The card is then turned over, end for end. Now, with the string at the same point where it was held for "C" and "D", and the same radius and the point of the pencil at the desired starting point, strike segment E-F. For very large work, the cracks on a wood floor can be used by placing the sign board at right angles with the crack, so that the crack crosses the center of your sign board. Of course, where the composition is all straight lines, it is unnecessary to find the center of the card. The alphabet shown in Fig. 9 is known as "One Stroke Round Block." It does not differ materially from the Egyptian alphabet, shown in the October issue of the Magazine, in general formation, with the exception that "spurs" are added at the extremities. As the name "One Stroke" implies, each composite stroke is made by a single stroke of the brush, and Fig. 9 also shows arrows giving the directions of strokes and the figures give the order in which they are drawn; whereas the Egyptian alphabet referred to is not a "One Stroke" alphabet but is a finished letter. In the October issue, on page 395, Fig. 4, there is shown the formation of the finished letter. It is executed by making the outline and "filling in" the center, but the Egyptian alphabet can be done in "One Stroke" style if desired.

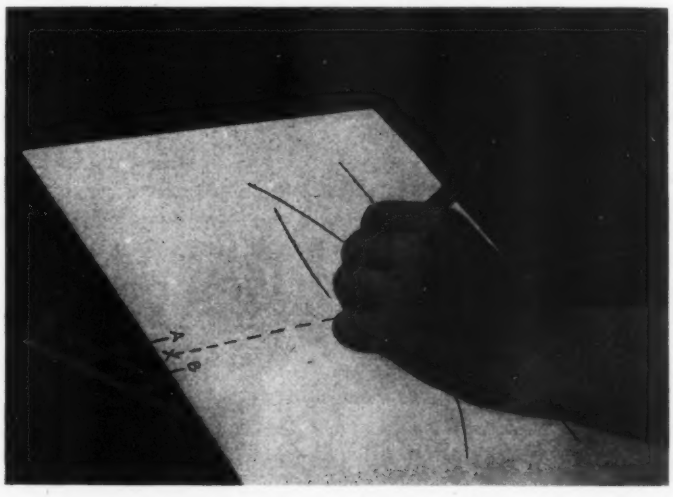


Fig. 6.

The "spurs" on the "One Stroke Round Block" should not be too long. They should extend about one-half the width of the letter stroke, on each side of the letter stroke itself. Notice that the letters "E"

Fig. 7.

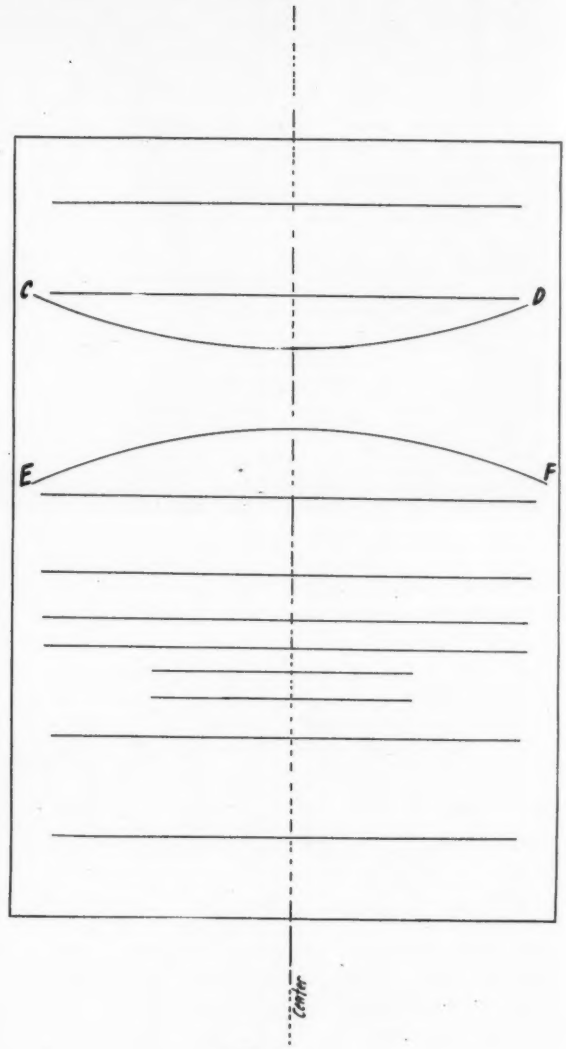


Fig. 8.

and "F" do not have "spurs" on the center bars; that the "M" does not have a "spur" on the center extremity; and the "N" is devoid of a "spur" on the bottom right hand side, as is the "W" on both lower extremities, but possesses "spurs" on the three top ones. When making this alphabet, it is well to start the letter stroke a little below the top line and stop it just above the lower line. (See Fig. 10.) When the "spur" is added, it completes the end of these strokes and saves "squaring off" the extremities. It would also be well to practice making the Egyptian alphabet in "One Stroke" style, as on this alphabet quite a number of the standard alphabets are founded, and with very little effort they could be mastered, giving the student a little variety. For fast work, the "One Stroke" alphabets are indispensable, and as we are living in an age of speed, it behooves the modern sign painter to be an adept in this particular branch of this occupation. For permanent work, it is well to do the subordinate lettering in "One Stroke" style, but "catch lines" and "display" should be made in the finished style. To emphasize a certain word or line of lettering, use a vastly different style for the word or line to be emphasized, but never, under any circumstances, use letters of different alphabets, in the same word. Maintain purity of style, as this is to art the same as grammar is to language. Another way of emphasizing is by changing the color for the part of the composition on which emphasis is desired.

Note: A subsequent article will contain "Lower Case" alphabets to go with the capital alphabets shown previously.

Fig. 10. Preliminary Strokes and Completed Letter of "One-Stroke Round Block" Alphabet. (See pages 25 and 26.)

Fig. 9. Complete "One-Stroke Round Block" Alphabet.

INDUSTRIAL-ARTS MAGAZINE

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EDITORIAL

THE ART OF CAMOUFLAGE.

THIS word *camouflage*, which is now so much in mind and on the lips, is one of the most significant of the many words brought to us by war.

Literally, the word means to throw dust in the eyes of, or to disguise one's real designs.

Deceit has always been essential to successful warfare. The surprise attack is only possible when the enemy has been deceived and deceit is the most effective defense against a superior force in war.

We believe Americans are comparatively honest as they are comparatively ingenious. Now our ingenuity is directed to deceive the enemy. Companies of painters and modelers from the ranks of our artists are busy applying their graphical skill, to make things look deceptive to the enemy. Bridges and roads are covered with painted canvas to deceive the observing enemy. Ships and defenses are mottled with colors that do not carry but blend into the distance. Stumps of trees and even dead animals are modeled to hide the pickets in No Man's Land.

Truly, dishonesty is the only safe policy in dealing with a ruthless enemy. Yet just as true is the adage that The Arts of Peace are in no degree deceptive. The Art of Camouflage is but one of the horrors of war and we must let it pass with war.

The Arts of Peace measure a nation's development. In these arts no surprise attack is necessary or desirable. The faked exhibit; the cribbed design; one material made to imitate another; innumerable yankee inventions to deceive the gullible public must all pass with the arts of war and American ingenuity must be directed toward arts that are substantial and beautiful because they are honest and refined.

TRADITIONS.

IN a recent school paper, published by the pupils of the school, appears the following statement beginning an editorial on traditions.

"One of the lamentable wails heard about the campus is that we have no traditions. Traditions, what are traditions? No one seems to know except that they are intangible somethings which people like to talk about in awed and reverent whispers and which are supposed to lend some esthetic or historical value to a school."

A tradition is defined as an "oral account transmitted from age to age." The definition puts no censorship on these accounts. They may be good or bad, useful or wasteful.

Traditions are established thru experience and are of historical interest. Until revoked by new experiences they are guides to thought and action.

It is not surprising that at such times as the present, youth will not listen to experience but looks always forward for new sensations.

Even old age forgets tradition and stands dumb before the procession of rapid events.

Our public schools are in the making and have few valuable traditions, yet it is the business of teachers to know the traditions of the subjects they teach, suppress the useless or wasteful, and enrich their instruction with useful tradition.

A SUGGESTION FOR THE PROGRAM.

IT is generally conceded that there is much in common between instruction in the fine arts and instruction in the manual arts.

In spite of the concession there is very little cooperation between teachers of these subjects.

Organizations composed of teachers of the fine arts and teachers of the manual arts have a difficult problem in holding the interest of both classes of teachers to a general program.

The solution would seem to lie in the direction of making the programs less general and more specific.

We suggest that in place of employing notable speakers to offer glittering generalities to the teachers, these organizations compose their programs of actual demonstrations of teaching practice by teachers of experience, preceded by a stated end in view and followed by discussion.

We surmise that the "notable speaker" would be unable to fill an engagement of this sort.

We surmise also that the common ground between the fine arts and the manual arts would be clearly exposed by such demonstration and discussion and accepted at its face value.

DESERVED RECOGNITION.

APPRECIATION of the work of a teacher or a department is rarely set down in the public records of boards of education unless it be that the deserving person, or group, has passed out of the land of the living, and thus cannot enjoy the recognition which he has earned. In contrast to this usual procedure the Cincinnati board of education at its meeting in September, adopted the following resolution:

"Whereas, the report of the superintendent shows that the actual cash value to the schools of work done in the manual training department amounted to $10,221.49 for the past year, now therefore

Be it resolved, that the board express its appreciation to the director of manual training, the public schools, the teachers and the pupils for the splendid work done and for the spirit of co-operation which they have manifested."

It should be added that the work was undertaken largely in shops equipped only with the ordinary bench tools and that the furniture and equipment were made not for a monetary saving but as genuine

educational projects. Motivation, insight into industrial methods and community welfare were the chief objects attained. Mr. Elmer W. Christy, director of the department, and his associates well deserve the recognition which they have received.

WHY NOT "PROVOCATIONAL?"

PEOPLE seem to apply names to their work as they do to their children—not for what the names signify, but for the way they sound.

We are not disposed to attach undue importance to matters of terminology. We think a great deal more of the spirit than of the letter. However, some of the bitterest contests in the development of vocational education have arisen out of attempts to define our work so as to make it fit our terminology. The process should have been reversed. The terminology should have been selected or coined to fit the work.

One more or less obvious misfit is the rather hazy, inclusive term, "prevocational." Used in its simple, literal sense, it would signify any manner of work performed prior to the taking up of vocational work. It can mean something different only "by interpretation." But such a use is somewhat similar to one educator's definition of a high school. He says: "A high school is a school that is a little higher than a school that is not quite so high."

As pointed out in a previous issue, any kind of prevocational work that deserves a permanent place in our schools is that rare type that opens up a correct view of actual adult occupations—that acquaints the boy with the nature, advantages, disadvantages, and something of the technique of various vocational pursuits. Such work is properly and accurately characterized by the term "*pro*vocational."

The literal definition of this word would indicate such courses as would *call forth* the elements, principles, and characteristics of definite vocations, or *stimulate* or *provoke an interest* in such vocations, or give such an insight into the vocational world and such information and guidance as would help most surely to put a boy on the way to profitable work adapted to his particular endowments.

Thus, by using the term "provocational" we should be using a word whose obvious and primary meaning describes exactly the best work that has thus far been done under the name of *pre*vocational work.

A NEED AND A CAUTION IN WAR WORK.

THE country is in need of the services of every loyal person. In numerous ways the schools have found immediate service they can render in the preparations for war.

This service takes the form of sewing, knitting, surgical dressing work, food conservation, the making of splints, stretchers, crutches, etc., for field and hospital use, and various other helpful activities.

For those who look forward to the doing of any of these excellent things, perhaps a word of caution would not be out of order. In the government service, practically everything is standardized. Naturally, but little deviation from the standard forms and methods will be permitted. Hence, among the very first things to be done on undertaking any of this work is to find out from the proper authorities exactly what is expected and what the standards are. The next thing will be to follow instructions implicitly. It is our opinion that if these two things are scrupulously observed, but little trouble will be experienced by those who undertake any of the special war work.

We have been moved to make these very obvious suggestions because of information we have received concerning the waste of time, effort, and material by the simple neglect of these evident facts.

PUBLIC TASTE AND EDUCATION.

* * * PUBLIC taste should be a sort of current flowing thru all the veins of our citizenship; an attribute of the man in the street; born in him with his birth; fostered thruout his childhood, his adolescence and his maturity. Not a polite possession; * * * not a negative, passive acquirement, but a living force, causing in him acute liking and desire for things orderly, tidy, useful, economical, good and beautiful; hatred for, and active revolt against poverty, shiftlessness, wastefulness, disorder, lack of foresight, sham and ugliness. With such a taste generally existent, there would be no mountains we might not move; our preachings and appeals would be to ears trained and receptive; our visions disclosed to eyes clear sighted from looking square at facts. For that taste will be the product of knowledge; knowledge of what is and of what should be, of the relation of things and of their meanings, of the relation of the individual to the community.

I have dared to say it will be, for that is what I believe. I do so believe because the knowledge of which this public taste may be born is to be derived only from education, and I greatly mistake present tendencies if they do not point to new educational paths, paths of self-realization as against mechanical obedience; of the substitution of self-discipline for dogmatic drill; of "learning by doing." The road is a long one and it needs so much re-paving that against the dull conservatism clinging to so many deep old hindering ruts, the only effective forces must needs be revolutionary.—*C. Grant La Farge.*

"Readjustment in Education" will be the general topic to be discussed at the Fourth Annual Convention of the Vocational Education Association of the Middle West to be held January 24-26, at the Morrison Hotel, Chicago.

ASSOCIATION ACTIVITIES

IOWA TEACHERS DISCUSS FEDERAL ACT.

The annual meeting of the Iowa State Teachers' Association was held in Des Moines, November 1st, 2nd, and 3d. In the Industrial Arts Section the principal address was given by Dr. Wm. T. Bawden, Specialist in Vocational Education, U. S. Bureau of Education, Washington, D. C. Dr. Bawden spoke on "The Smith-Hughes Act and the Manual Arts."

After outlining briefly the objects of the Smith-Hughes Act, and the scheme of organization of the Federal Board for Vocational Education, the speaker called attention to the specific provisions of the act prescribing the kinds of instruction in industrial subjects that are subsidized, as follows:

1. Grants from this fund must be used exclusively for salaries of teachers of industrial subjects; cost of supplementary instruction must be borne by state and community.
2. Every federal dollar must be matched by a state or community dollar.
3. The work must be under public supervision or control.
4. The controlling purpose of the instruction must be to fit for useful employment.
5. The instruction must be of less than college grade.
6. The instruction must be designed to meet the needs of persons over 14 years of age who are preparing for a trade or industrial pursuit or who have entered upon the work of a trade or industrial pursuit.

Instruction for persons who have not entered employment must meet the following conditions:

7. At least half the time of instruction must be given to practical work on a useful or productive basis.
8. Extend over not less than nine months per year.
9. Include not less than 30 hours per week.
10. At least one-third of the federal fund, if expended, must be applied to part-time classes for employed workers over 14 years of age.
11. Industrial subjects in such part-time class may mean any subject given to enlarge the civic or vocational intelligence of such workers over 14 and less than 18 years of age.
12. Part-time classes must provide for not less than 140 hours classroom instruction per year.
13. Minimum entrance age for evening schools must be 16 years.
14. Instruction in evening classes must be confined to that which is supplemental to the daily employment.
15. Teachers must have the minimum qualifications set by the State Board and approved by the Federal Board.

In what ways will the operation of the Smith-Hughes Act, and the development of vocational classes receiving federal aid, affect manual arts work in the public schools?

It is evident at the outset that very little of the manual training as now carried on in the public schools meets the conditions prescribed by the act. In many schools the attempt will be made to reorganize the manual arts work in order to qualify under the law. In every community where the superintendent, teachers, and citizens are awake to what is going on, the work is bound to be affected.

Modifications in manual arts work will probably take place in some or all of the following directions:

1. The manual arts are not likely to be affected directly in a financial way by the Smith-Hughes Act, even if all the work conforms to the requirements. The fund is too small.
2. The operation of the law will stimulate a study of the educational values of manual training which we have been giving for general education, in order to see that these values are sacrificed as little as possible in putting activities on a vocational or productive basis.
3. It will stimulate a new attitude on part of manual arts teachers and supervisors as to the aims and purposes of their work. They will necessarily become alert to any new values that appear in the vocational work which may be utilized or adapted to the manual arts.
4. It will stimulate a study of ways and means of making manual arts shopwork, with its time limitations, more useful and productive than it has been.
5. The demonstration of the successful vocational school, with half time devoted to practical shopwork, will radically disturb some existing notions as to the amount of time that can be spared from other studies for the manual arts.
6. The development of continuation schools will be greatly stimulated in many localities where conditions do not afford favorable opportunity or demand for all-day trade classes.
7. Teachers and directors of the manual arts who have the necessary qualifications will be stimulated to prepare new plans for their schools, to be submitted to their superintendents and boards of education, and by them to the State Board, for action.
8. The ranks of manual arts teachers and supervisors will be affected directly by the drafting of many individuals who will become the vocational education leaders.
9. Many teachers and directors who do not have the necessary qualifications will be stimulated to secure them.
10. There will undoubtedly be a general upward revision of salaries of teachers of these special subjects.

Following Dr. Bawden's address, Mr. Edward T. Snively, of Fort Dodge, Iowa, read an interesting paper on "The Use of Textbooks in Teaching Manual Training." He heartily recommends their use when used discriminately and "even a lazy, poorly equipped teacher is probably safer with a textbook than without one—or, at least, his pupils are safer—for the bright ones can gain much from the book."

Mr. Snively sent a questionaire to various authorities on the manual arts, and the prevalent opinion seems to be in the proper use of a textbook in every manual arts subject. "It saves the teacher; and anything which relieves him of monotonous detail, that gives him time to become acquainted with his boys, time to play and so come refreshed and buoyant to his class is worth while. The use of a textbook is better for the boy. It gives him the habit of combining theory with practice. It helps him to estimate the value of books. Even tho he accomplish no more with a text than without one, the instinctive turning to books as well as to people and direct observation to meet a new situation is a habit worth cultivating."

The new officers elected are: President, Edward T. Snively, of Fort Dodge; secretary, E. S. Baird, of Newton. —*Ralph F. Windoes.*

THE MICHIGAN MEETING.

The Sixty-fifth Annual Institute of the Michigan State Teachers' Association was held in Grand Rapids, November 1st and 2nd. Of particular interest was the manual training section which met in the auditorium of Central High School on Friday morning, with Arthur E. Schoettler and Maude Traut, both of Grand Rapids, acting as chairman and secretary. About two hundred teachers of manual training and household arts were present, with a sprinkling of superintendents and high school teachers.

The section was particularly favored this year by having as the principal speaker, Dr. David Snedden, of Columbia University, whose address, "Some Connections Between Practical Arts Education and Vocational Education, on the One Hand, and Liberal Education, on the Other," was closely followed and the subject for much discussion, which unfortunately had to be closed prematurely on account of lack of time.

Dr. Snedden defined practical arts education as a new name for manual training and its allied subjects, household arts, agricultural education and commercial education. "Practical arts as now adapted to boys and girls under 15 years of age is not vocational education, but should be classified and accepted as a very necessary part of liberal education. It may be possible for practical arts education to be useful as a means of vocational guidance, yet the great diversification of modern productive industry renders it doubtful whether elementary exercises in wood and metal can be made to serve a useful purpose in vocational guidance. It cannot, even in the junior and regular high school, be called vocational education unless it directly and consciously fits for a recognized vocation." Dr. Snedden dwelt upon the

great need for vocational education, which should be very definite in character, well balanced, with due consideration for general, technical, and practical education, the latter whenever possible occupying half the time, and under actual productive basis conditions, and with as high a standard as possible to attain. He gave many suggestions as to the probable application of the National Vocational Education Act, and a prophecy of the vocational high school of the very near future. His plea for a richer and more flexible practical arts, with elective courses of a wider range as a necessary part of liberal education, was the principal point of the discussion that followed his address.

somewhat vague and not to the point, but some definite action was demanded, and the section took a big step forward along a constructive basis. A committee of five, consisting of H. Hollenbach, E. G. Allen, J. H. Trybom, L. R. Abbott, and C. G. Wenzel, were appointed to study conditions in our state, and others relative to the application of the national act, and confer with the state board along the lines of vocational education. The section voted to request the association for funds not to exceed $100, to carry on the work of this committee, which is to report at the adjourned meeting in Ann Arbor, with the School Masters' Club, next spring.

TOY WEEK IN ST. PAUL.

The above illustrations give a faint idea of the recent Annual Toy Week held in St. Paul in connection with the Junior Good Fellow Campaign conducted in the elementary schools of the city. During the toy week, the children thruout the city brought in discarded toys which were collected by the senior good fellows of the city and taken to the St. Paul industrial school where they were fumigated, cleaned, repaired, re-painted and held for distribution at Christmas time. The number of toys received ran well into five figures.

During the week an interesting situation developed in that several thousand dolls were received which had to be re-dressed. An announcement in the local papers brought a number of women's clubs to the rescue and one club alone took between three hundred and four hundred dolls which its members repaired and re-dressed. It has been found that the repairing of toys gives the boys in the industrial school an opportunity for exercising ingenuity and skill in sheet metal work, wood work, electrical work, simple machine work, painting, staining, varnishing, etc.

The second discussion of particular interest to all, "The National Vocational Education Act, and Its Application to our State," was introduced by E. G. Allen, Director Mechanical Department, Cass Technical High, Detroit, who briefly stated the provisions of the national law and the provisions of the state law accepting it, and vividly brought before the section the needs of vocational education, conditions in general, and especially in his own city, and urged making use of the opportunity at once.

The chairman regretted being unable to present any of the plans of the State Board of Control for Vocational Education, as they did not send a representative and there were several questions arising which could not be answered at this time. The discussion on this topic, unfortunately, was

The officers elected for the ensuing year were: Chairman, C. G. Wenzel, Director of Manual Training, Kalamazoo; and secretary, Glenn Mayer, Instructor, Western State Normal, Kalamazoo.—*Arthur E. Schoettler.*

DETROIT MANUAL TRAINING CLUB MEETS.

The annual "Come-Together" meeting of the Detroit Manual Training Club was held October 27th at Detroit.

The program for the year as prepared by the executive committee indicates some good things are in store for the members. The two special numbers on the program are: "Leonardo de Vinci as a Constructive Genius" by Mr. Ralph Collanmore, consulting engineer, and "The Functions of an Up-to-date System of Manual Training" by Supt. Charles Chadsey.

Copies of "Architectural Standards and Conventions" were distributed among the members. The pamphlets are the work of a special committee of eight, of which Mr. Irving Koehler is chairman.

The following officers were elected: President, F. I. Solar; vice-president, A. M. Cornwell; secretary, E. A. Gibson; treasurer, F. E. Hanke.—*A. M. Cornwell.*

ALLIED ARTS TEACHERS OF INDIANA MEET.

The Allied Arts Section of the Indiana State Teachers' Association held its annual meeting November first at the Emmerich Manual Training High School, Indianapolis, Ind. Miss Mabel Arbuckle, president of the association, presided.

Miss Mary E. Williams told the assembled teachers how special work is co-ordinated in Richmond, Ind., illustrating her talk with slides. Mr. Harry Wood explained mass production in jigs and fixtures for manual training shops. He showed that the Indianapolis school shops approximate the factory plan with machines made by the boys. Mr. D. W. Moyer, of Anderson, showed some interesting examples of printing done by his students, illustrating co-ordination of printing with art. Dr. James P. Haney, of New York City, who gave the principal address of the meeting, talked on "Practical Teaching of Design in High Schools." Dr. Haney emphasized the future need for trained designers in the United States and showed what New York high schools are doing in the training of talented students.

The following officers were elected for the ensuing year: President, Mr. J. W. Rhoads, of Muncie; vice-president, Miss Bessie Foster, Hammond; secretary, Miss Carolyn Ashbrook, Indianapolis.—*Louise H. Maltby.*

The Manual Arts Teachers of Washington held an informal meeting early in November, at Tacoma. The manual arts faculty of Tacoma treated the visitors to a sight-seeing trip thru the army camp at Camp Lewis, followed by a luncheon and social evening.

It was decided to create a special fund for covering the expenses of the meeting and the speakers who attend.

At the business session, Mr. Edwin G. Anderson, of Seattle, was elected president, and Mr. J. S. Lane, of Snohomish, secretary.

CHICAGO INDUSTRIAL-ARTS ROUND TABLE MEETS.

The Industrial-Arts Round Table of Chicago and vicinity held a profitable meeting November 9th, at Pullman, Ill. About 56 members of the club were present.

The forenoon was devoted to a visit to the Pullman car shops, at the Pullman Free School of Manual Training. At the conclusion of the inspection, the guests were treated to a dinner by the domestic science department of the school.

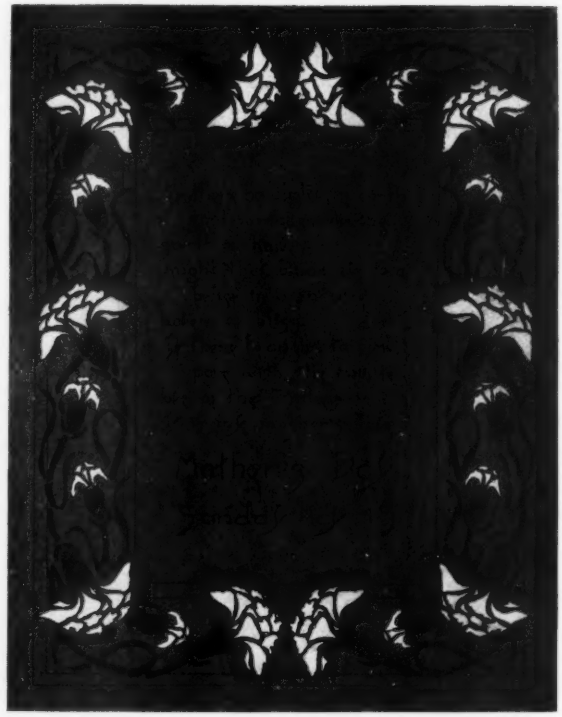
In the afternoon, Dr. Weld, the president, gave an interesting address on the school, its organization and aims. Additional talks were made by the Pullman faculty and by the members of the club. The remainder of the afternoon was spent in visiting the various buildings and observing the work in the school shops.—*O. M. Merriman.*

SCHOOL CRAFTS CLUB MEETING.

The first general meeting of the School Crafts Club of New York City for the school year 1917-18 was held on Saturday afternoon, November 17th. About fifty men were present. Before the speakers of the evening made their addresses a short business session took place at which four teachers were added to the membership. President E. G. Traua presided and Mr. E. A. Reuther occupied the chair during the formal program.

"The Citizen in Industry" was the subject of Mr. H. L. Gantt, who was the guest of honor. Mr. Gantt is a former vice-president of the Society of American Engineers and is an expert on industrial management. Mr. Gantt's address will be found on page 33.

At the close of Mr. Gantt's address, Mr. Charles Ferguson, who was a chance visitor at the club meeting, was asked to talk. Mr. Ferguson was a representative of President Wilson to European governments in company with Colonel House, before the war. He studied the political conditions of those countries. Mr. Ferguson was extremely interesting and instructive and his thoughts, most aptly expressed, gave his hearers much to think about. Mr. Ferguson proved that strength is right and that violence is weak: That strength is composed and orderly and the reverse is weakness. He pointed out that the most efficient workman is the one entrusted with responsibilities. The genius in the industrial world is the man who must do none of the work in the industrial plant. He is the most useless of all the members of that organization but he must be the inspiration of all the others. He must be able to infuse in his subordinates the power to decide for himself. Mr. Ferguson was subjected to a long after-session of questions and continued to a late hour relating incidents of his life and experiences.



A reproduction of a poster made in the Dubuque, Iowa High School, for Mother's Day, 1917.

The lettering and design were produced by the Class in Fine Arts. This poster with others made by the class was displayed in the School Halls and the art display windows of the city.

The lines were written by a Senior English Student, awarded the honor of having his production appear because of its merit as an example of poetical prose.

Miss Linda Rider, *English Director.*
Miss Mary Brownson, *Art Director.*

ELEVENTH ANNUAL MEETING OF THE NATIONAL SOCIETY FOR THE PROMOTION OF INDUSTRIAL EDUCATION.

The National Society for the Promotion of Industrial Education will hold its annual meeting February 21-23, 1918, at Washington, D. C. The program for the convention will be based on the fact that vocational education has a national significance in promoting the present war program and that discussions on how vocational teachers can make their contribution to the national program for conducting the war are in order. The Federal Board for Vocational Education will be represented at the conferences, giving suggestions on how to unify the vocational education plans in the states and how to develop a common program adapted to actual needs.

Round-table discussions will be the chief features of the meeting. The discussions will center around vocational education in war-time, problems of the administration of the Smith-Hughes Act, a program for vocational training for present day industry, re-education of returned soldiers, and the future policy and work of the society.

THE CITIZEN IN INDUSTRY

H. L. Gantt

The recent developments in the progress of the war make it increasingly clear that economic conditions are going to play a most important part. It seems improbable that a military decision will be reached at an early date. It is thoroly realized that the economic strain will increase with the duration of the war, and it is entirely possible that the ability to stand the economic strain will ultimately be the deciding factor.

That we shall probably be able to raise all the money we need, at least for some time to come, is clearly indicated by the success of the Liberty Loan, but it is also perfectly clear that money alone will not enable us to win the war. The test of our economic strength lies not so much in the amount of money we can raise as in the amount of goods and munitions we can produce.

We all hope, of course, that the war will be ended long before most of those receiving their industrial training in schools today have taken their places in industry, yet the war is of such a nature and the issues are of such a character that the end is absolutely indeterminate from any knowledge we have today, and may be many years off. As a war measure, therefore, as well as a peace measure, we must consider what our industrial schools must do to add economic strength to the community.

Altho we are waging a war for the suppression of military autocracy, we have not realized with sufficient clearness that so far our efforts are being supported by a business system which itself is essentially autocratic. This being the case, we should certainly ask ourselves the question as to whether it is not illogical for us to fight autocracy in one form while encouraging it in another. If we are such firm believers in democracy that we are willing to go into a world war to maintain it, should we not study the problem at home and plan to obtain a broader application of the principles we are fighting for in our own midst? If we accept this proposition, we must ask what the object of our industrial schools should be. Shall we so train our youth as to make them servants of an autocratic business system, or shall we so train them as to enable them to aspire to the highest positions of leadership in the industrial world? In other words, shall we train our youth for a business system such as we have had in the past, or shall we train them for the democratic business system which we shall achieve in the near future?

We shall begin to realize shortly that war plays no favorites. Only those of proved ability can be trusted with the execution of important projects, whether they be military or industrial. We depend upon our military schools to train our military leaders; in like manner we must depend upon our industrial schools to train our industrial leaders. The term "industrial leadership" has appeared quite frequently in the press the past two or three years, previous to which time it hardly existed. For a number of years the term "captain of industry" had a great run, but inasmuch as it applied more particularly to people who had promoted combinations thru control of finances rather than thru advancement of productive capacity, it naturally fell somewhat into disrepute, as the public received but little benefit from their efforts, but saw the large part of the profit going to a select few. During the time when this term had its greatest publicity, there was a strong feeling thruout the country that the most important element in any enterprise was the financial element, and that if there was only money enough available, nothing else mattered very much. This idea has not held good, for we are beginning to realize that there is an end to the largest bank account, and are rapidly coming to the conclusion that neither money nor organization will permanently insure success without proper direction. It is therefore imperative upon us to study leadership, and to find the laws on which successful administration is based.

The absolute necessity for proper leadership in industry thus becomes clear, and we begin to see a close parallel to leadership in war, the necessity for which today is becoming increasingly apparent. History has given us very accurate accounts of great generals, and it is of this class of leadership that we can learn most. After a little study we realize that leadership in war and leadership in industry are not only based on the same principles, but are equally important. It seems therefore that in order to give this subject the attention it deserves, we should profit by the account that history gives us of great warriors. Industrial leadership has been largely overlooked in the past for the reason that accidental conditions have in many cases been quite as effective in securing wealth as leadership. Such opportunities are, however, no longer numerous, especially in our industries, and a study of industrial leadership is forcing itself upon us.

Just as war is the great training school for those who are to make war, so industry is the great training school for those who are to create industry. Leaders in war and in industry hold the same relative importance in their respective spheres. If this is the case, it is well for us to see what the greatest warrior of modern times has to say about the importance of leadership in war, and thus arrive at some appreciation of the importance of leadership in industry. Napoleon said:

"In war men are nothing; it is the man who is everything. The general is the head, the whole of any army. It was not the Roman army that conquered Gaul, but Cæsar; it was not the Carthaginian army that made Rome tremble in her gates, but Hannibal; it was not the Macedonian army that reached the Indus, but Alexander; it was not the French army that carried the war to the Weser and the Inn, but Turenne; it was not the Prussian army which for seven years defended Prussia against the three greatest Powers of Europe, but Frederick the Great."

The historian in making this quotation stated that Napoleon reiterated a truth confirmed by the experience of successive ages, *that a wise direction is of more avail than overwhelming numbers, sound strategy than the most perfect armament.* Similarly in industry—*a wise policy is of more avail than a large plant; good management than perfect equipment.*

The historian goes on to say:

"Even a professional army of long standing and old traditions is what its commander makes it; its character sooner or later becomes the reflex of his own; from him the officers take their tone; his energy or his inactivity, his firmness or vacillation, are rapidly communicated even to the lower ranks; and so far-reaching is the influence of the leader, that those who record his campaigns concern themselves but little, as a rule, with the men who followed him. The history of famous armies is the history of great generals, for no army has ever achieved great things unless it has been well commanded. If the general be second-rate, the army also will be second-rate."

These facts in military history have their exact counterpart in industrialism, for THE FACTORY INVARIABLY REFLECTS THE MANAGER. The real problem of today is, then, how to select and train, or rather how to train and select our industrial leaders. We of course look to our military schools to train our military leaders. Our industrial and engineering schools have exactly the same responsibility toward our industrial leaders.

Napoleon claims that the success of his armies was due to the fact that every common soldier carried the baton of a marshal in his haversack.

In the same way the success of our industries, and hence of the country, will in a large measure depend upon the opportunity for the man in the ranks to better himself, and the methods of training so far as the state is concerned should be such as to enable him to take advantage of that opportunity.

The widespread adoption of the public school system has committed our country to the responsibility of training our youth intellectually, and the time seems rapidly approaching when the state will assume the responsibility for training the youth in manual dexterity. There is no question that this is the logical outcome of our industrial conditions, and one of the problems which faces us is just how far it should go in

Address before School Crafts Club.

special training. In other words, if the state accepts the responsibility for industrial training, how far shall it accept the responsibility for vocational training?

Just as some knowledge of engineering and of industrial processes is rapidly becoming one of the essentials of a liberal education, so also is an elementary knowledge of the use of the ordinary tools of our common industries becoming an essential part of any education.

It is my feeling that when our school system has given this general training, it has assumed all the responsibility for the training of workmen that can be legitimately put upon it. Any additional training must have special reference to a particular industry, and is generally termed vocational training. Such training it is the function of the industries themselves to give; but in order that a workman may develop himself to the best advantage, vocational training should always be preceded by industrial training which gives him the ability to learn more than one trade with surprising rapidity, and thus develops in him a spirit of independence and self reliance, the value of which it is hard to overestimate.

The rapidly changing conditions in our industries, which make it necessary that the workman shall be able to adapt himself readily to new conditions, emphasizes the importance of the more general industrial training as a precedent to vocational training, which, without the former, is apt to make many men slaves of the industry in which they were trained. Such men suffer a great hardship when a change of industrial conditions throws out of employment men whose limited training makes them unfitted for any other industry.

While it does not seem to be the function of the state to assume the responsibility for vocational training, it does seem very desirable that our schools should co-operate with such industries as desire to assume this responsibility, and the part time system by which boys spend alternate weeks in school and in a shop seems the most promising scheme that has been attempted.

Aside from this viewpoint it is the duty of the state as a whole to see that our training methods are such as will make the most valuable citizens. In order to determine what course the state should take to accomplish this result, we must ask what qualities in the workman are most beneficial to the state as a whole.

In order to answer that question, I will tell a story I heard years ago of a well known Baltimore Judge who went to visit a friend in one of the southern counties of Maryland, a large part of which is composed of sand hills and pines. His host met him at the steamboat wharf, and as they were driving slowly homeward thru the deep sand of the road, the Judge finally said, "What do you raise in this country, anyhow?" He got the reply:

"Raise men."

This answer showed a deep insight in the most important problems of all ages. *That country which, as a whole, has the best men will surely assert its supremacy in the long run.* As far as the state is concerned, therefore, in its connection with industries, it should carry out that policy which has the tendency to produce the highest grade of men.

Wealth is convenient, luxury is pleasant, but that nation which does not so develop its industries as to produce men, will not for any great length of time hold its place in the world. The Roman empire, just before its fall, had wealth and luxury in abundance; but wealth and luxury both have enervating tendencies, and the empire succumbed before the strong manhood of the Goths.

It is imperative, therefore, that in seeking the proper industrial methods to bear in mind the fact that the men produced by them are far more important to the life and prosperity of a nation than the wealth and luxury by which we set so much store. We, as a nation, have been accused, and with a certain degree of justice, of putting the almighty dollar above everything else. We cannot fight a war on that basis.

As said before, the idea so prevalent a few years ago in the industrial world that money was the most powerful factor, and that if we only had money enough, nothing else mattered very much, is beginning to lose force, for it is becoming clear that there is an end to the largest bank account, and that the size of the business is not so important as the policy by which it is directed. Some of our large industrial combinations have already felt the force of this fact, but I doubt very much if those at their head have a very clear idea of the exact cause of their misfortune.

Too often the system of cost accounting has been to a large extent to blame, for the systems in general use often fail to disclose the real troubles, and content themselves with blaming the shop with inefficiency.

It is true that many shops are managed inefficiently, but it is also true that this inefficiency is often due to financial, or selling, policies over which the superintendent has no control. As a matter of fact, the call for efficiency which has been so loudly proclaimed thruout the country for several years has had a great deal of influence on shop organizations, but it has hardly been heeded at all in the financial and selling ends of business, where it is needed even worse than in the shops.

The time will come, and indeed is not far distant, when cost keeping and accounting methods, which in the past have been devised to put all blame on the shop, will be so changed as to place blame for failure where it belongs, and give credit to him to whom credit is due. They will then show clearly that a wise policy is of more avail than a large plant; good management than perfect equipment.

Such a change will do much to help the capable workman toward advancement, and will show most clearly the advantage of proper training methods.

In the past our industries have been controlled by those and in the interest of those whose financial power gave them the legal title. In time of war traditions and legalities go into the discard as soon as the emergency becomes sufficiently critical, and the man that can deliver the goods is given the authority and responsibility, no matter how he may have been legally limited in the past.

Schools in general have a tendency to content themselves with teaching the use of words. You gentlemen have assumed the responsibility of teaching the use of tools. I trust you realize your responsibility, for as a nation, our safety in the immediate future will depend enormously more on our ability to use tools than our ability to use words.

KANSAS MANUAL ARTS TEACHERS MEET.

The Manual Arts Association of Kansas held its annual convention November 8-9, at Topeka. Mr. D. C. Gilbert, president of the association, presided at the sessions.

State Supt. Nathan C. Schaeffer, of Pennsylvania, spoke on "Vocational Education," Mr. Stone, of Kansas City, gave an address on "Industrial Drawing," and Mr. W. A. Brandenburg, of Pittsburg, gave an interesting talk on "The Need of Efficiency in Education." Mr. Wells, of Salina, brought before the association the matter of making tables and chairs for the soldiers' Y. M. C. A. A committee of three was appointed to make uniform plans and specifications and to draw up the necessary regulations for carrying out the plan. Mr. Parks, of Wichita, rendered a memorium in honor of the late Carl Miller, of Wichita. A resolution of sympathy was ordered sent to Mr. Miller's widow.

At the business meeting the following officers were elected: President, W. L. Friley, Independence; vice-president, N. E. Huff, Fort Scott; secretary, W. B. Miller, Lawrence.

NORTH DAKOTA MEETING.

The Manual Training Section of the North Dakota Educational Association held half-day sessions on Oct. 31st and Nov. 1st. The first session was given to papers and their discussion. A paper which brought out much discussion and showed considerable thought in preparation was written by A. E. Field, director of mechanical science in the public schools of Valley City, and was entitled "Replacing Manual Training in Our City School Shops with Mechanical Science." The second session was devoted to Round Table discussions. Plans were laid for a bigger and better meeting in connection with the 1918 Educational Association meeting to be held at Minot.

The officers elected for the coming year were: President, L. B. Fields, Director of Manual Arts, Ellendale Normal-Industrial School; vice-president, A. E. Field, Director Mechanical Science, Valley Public Schools; secretary-treasurer, Roy D. Neff, Director Manual Training, Bismarck Public Schools.

PROBLEMS AND PROJECTS

The Department of Problems and Projects, which is a regular feature of the INDUSTRIAL-ARTS MAGAZINE, aims to present each month a wide variety of class and shop projects in the Industrial Arts.

Readers are invited to submit successful problems and projects. A brief description of constructed problems, not exceeding 250 words in length, should be accompanied by a good working drawing and a good photograph. The originals of the problems in drawing, design, etc., should be sent.

Problems in benchwork, machine shop practice, turning, patternmaking, sewing, millinery, forging, cooking, jewelry, bookbinding, basketry, pottery, leather work, cement work, foundry work, and other lines of industrial-arts work are eligible for consideration.

Drawings and manuscripts should be addressed: The Editors, INDUSTRIAL-ARTS MAGAZINE, Milwaukee, Wis.

A KIDDIE CAR.

LeRoy A. Prescott, Hackley Manual Training School, Muskegon, Mich.

The accompanying drawings show the detail and assembly drawing for a Kiddie Car which has been made by the boys in the eighth grade of the Hackley Manual Training School, with very satisfactory results. It is a project which is sure to hold the boy's interest from start to finish and that, along with the use of the various tools, which are necessary to complete the different parts, makes it a very desirable problem for any school shop.

In the detail drawing the parts are shown separately with all the dimensions and notes needed for making them. Each part is also given a part number, as for instance the top, which is Part No. K. C. 1, so that in the assembly drawing all that is necessary is to designate the parts according to the number given in the detail drawing, and the notes for sizes of screws, etc., to be used in assemblying the car.

The kind of wood to be used in making the different parts of the car is not stated definitely on the detail drawing aside from whether it should be hard or soft wood. Maple works out very well for the hardwood parts, as it is close grained, durable and easy to turn, while any soft wood is suitable for the other parts.

In boring the hole in the top (K. C. 1) for the steering post bushing (K. C. 7) it will be necessary to use an expansive bit, as it is $1\frac{1}{4}''$ in diameter. The holes for the screws to fasten the bushing to the top should not be drilled until the car is assembled.

When drilling and countersinking the holes in the cleat (K. C. 3) it would be well to notice that the center hole is set to one side to allow for the center screw which comes from the back (K. C. 4) into the cleat.

The bottom of the back (K. C. 4) is gouged out to give the rear axle (K. C. 10) a firm seat.

The $\frac{3}{4}''$ holes which must be put in the steering post fork (K. C. 5) and the steering post bushing (K. C. 7) should be bored in the lathe if possible, as it is much more accurate than boring by hand and accuracy is very essential at that point in order to keep the parts from binding when steering the car.

The wheels (K. C. 9) can best be made by turning them on a small face plate. The $\frac{1}{2}''$ hole for the axle can be bored while it is still in the lathe.

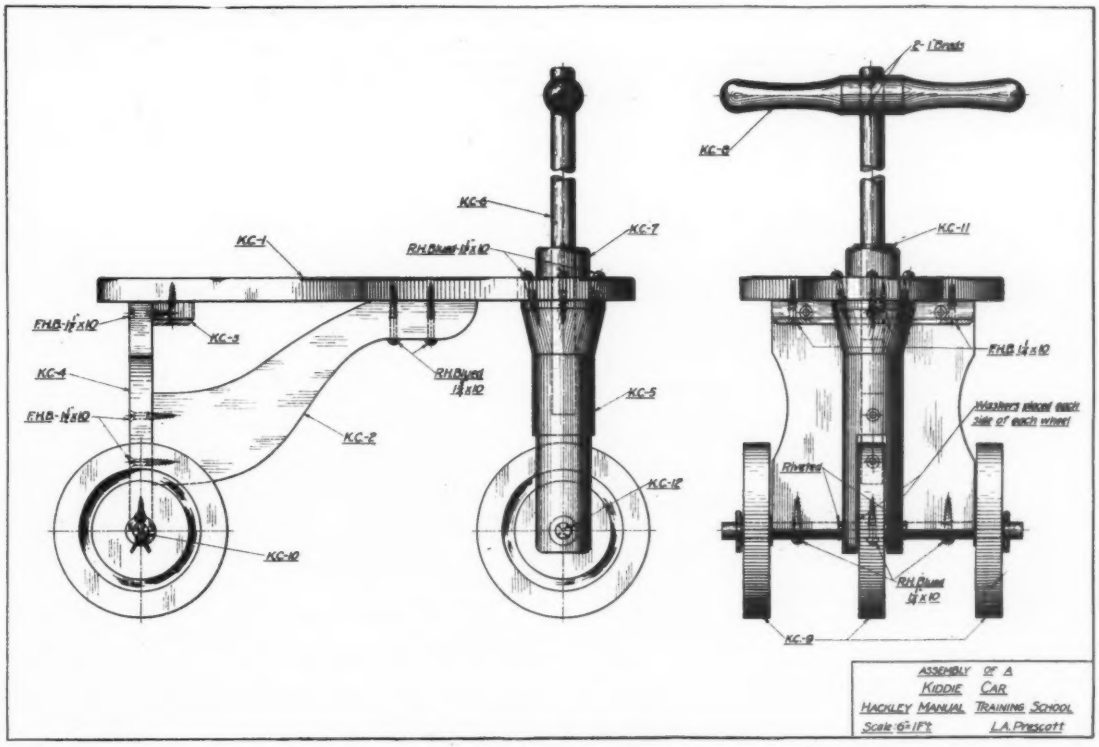
When assembling, place washers each side of each wheel to keep them from rubbing the adjacent parts. In the rear axle (K. C. 10) the holes for the cotter pins should not be drilled until the wheels and washers are in place, as it will insure a better fit. After the front axle (K. C. 12) is in place, the ends are riveted to hold it there.

The small steering post pin (K. C. 11) is used to hold the steering post in place. The hole for this is located and drilled during assembly.

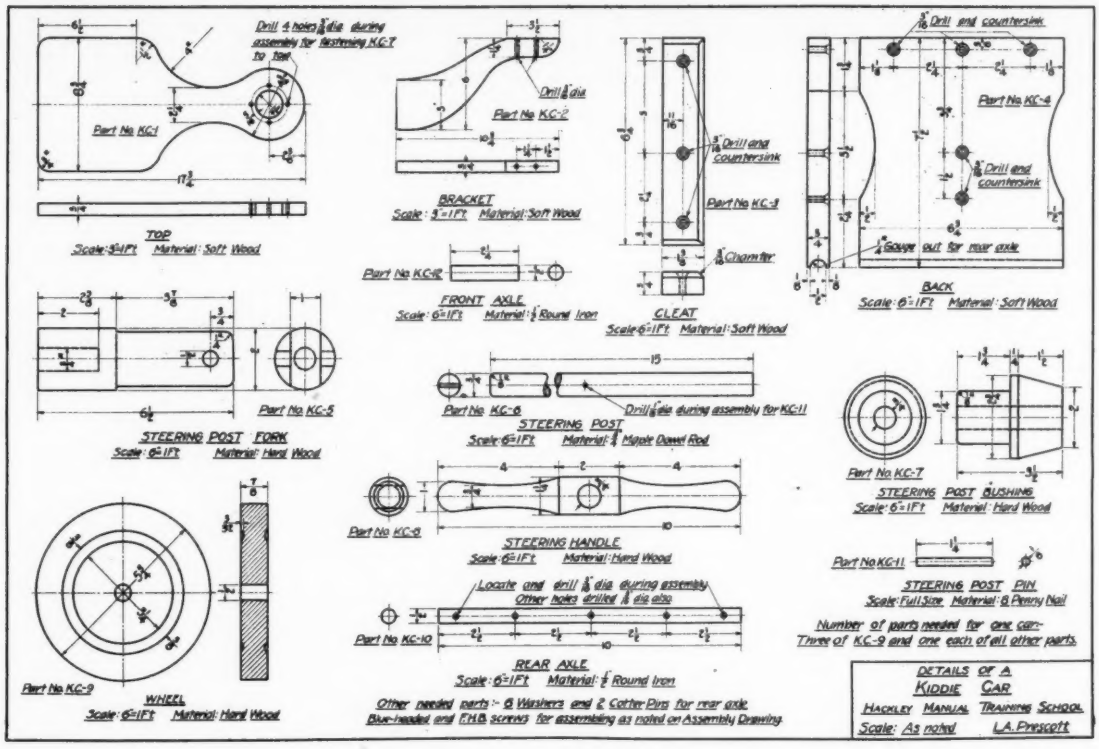
For a finish, shellac is satisfactory and easy to apply.

This project also makes a very desirable problem for the drawing room. It is the kind of a problem that can be given to the entire class with excellent results. Each boy can be given one or more of the details to draw on separate sheets. After that, some of the boys can be allowed to make assembly drawings from the details.

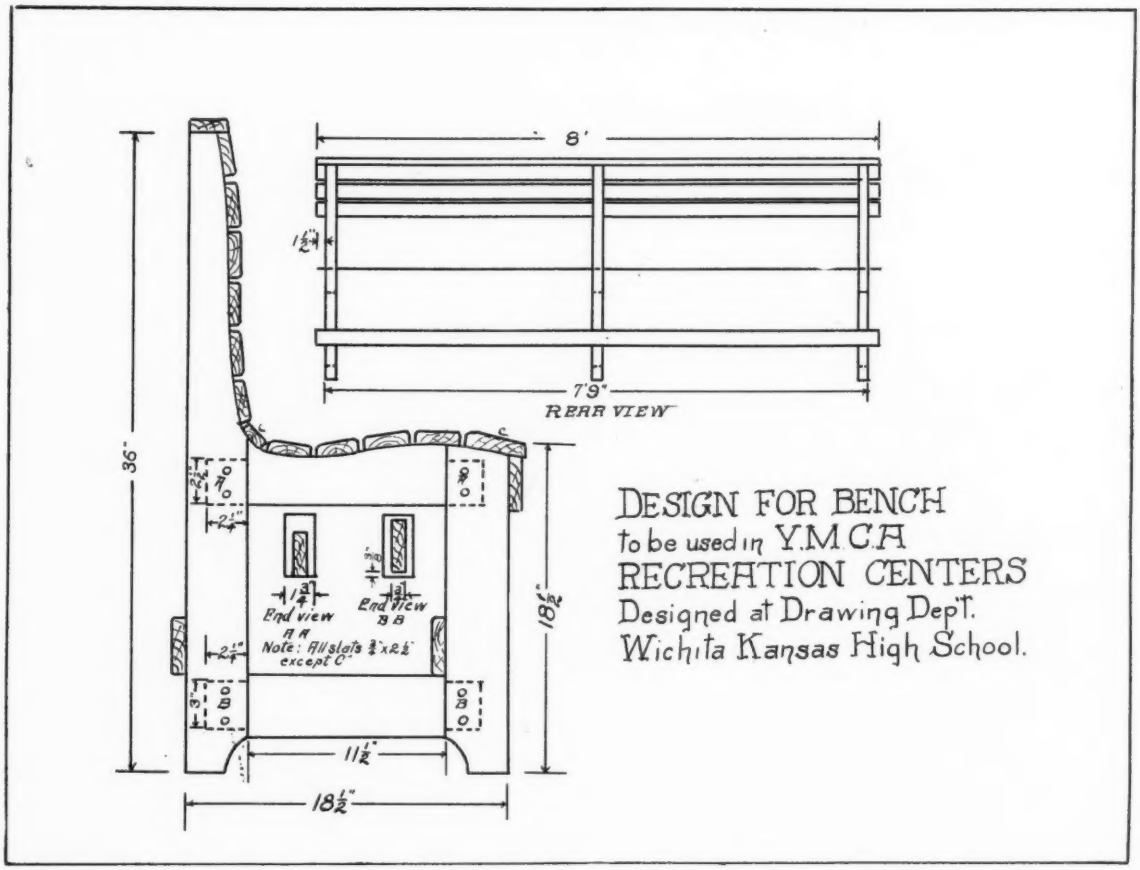
In a problem such as this, the student is getting the same principles he would get in drawing his various exercises,



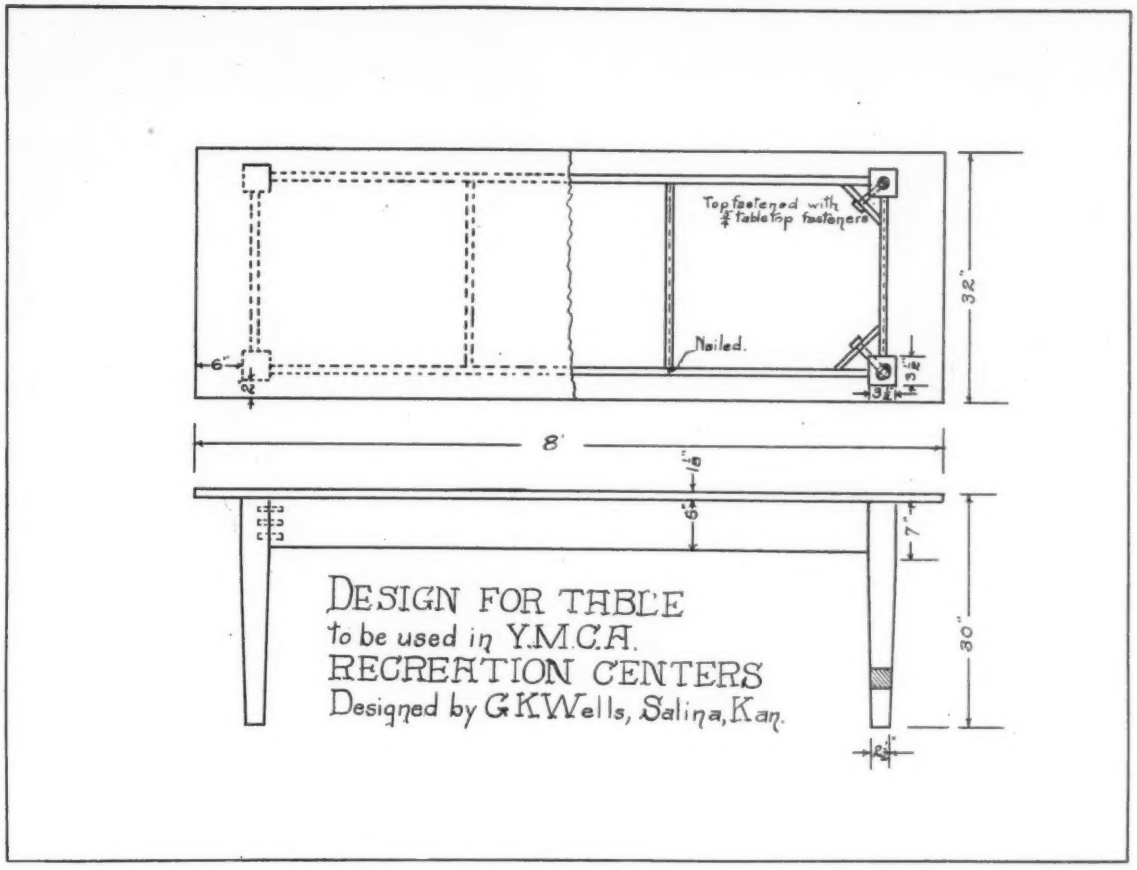
ASSEMBLY OF A KIDDIE CAR.


Drill 4 holes ⅜ dia during assembly for fastening KC-7 to top
Part No KC-1
TOP
Scale: 3=1 Ft. Material: Soft Wood
Drill ⅜ dia
Part No KC-2
BRACKET
Scale: 3=1 Ft. Material: Soft Wood
Part No KC-12
FRONT AXLE
Scale: 6=1 Ft. Material: ½ Round Iron
⅜ Drill and countersink
Part No KC-3
⅜ Chamfer
CLEAT
Scale 6=1 Ft. Material: Soft Wood
⅜ Drill and countersink
Part No KC-4
⅜ Drill and countersink
¾ Gouge out for rear axle
BACK
Scale: 6=1 Ft. Material: Soft Wood
Part No KC-5
STEERING POST FORK
Scale: 6=1 Ft. Material: Hard Wood
Part No KC-6
Drill ⅜ dia during assembly for KC-11
STEERING POST
Scale: 6=1 Ft. Material: ¾ Maple Dowel Rod
Part No KC-7
STEERING POST BUSHING
Scale: 6=1 Ft. Material: Hard Wood
Part No KC-8
STEERING HANDLE
Scale: 6=1 Ft. Material: Hard Wood
Part No KC-11
STEERING POST PIN
Scale: Full Size. Material: 8 Penny Nail
Part No KC-9
WHEEL
Scale: 6=1 Ft. Material: Hard Wood
Locate and drill ⅜ dia during assembly
Other holes drilled ⅜ dia also
Part No KC-10
REAR AXLE
Scale: 6=1 Ft. Material: ½ Round Iron
Number of parts needed for one car:
Three of KC-9 and one each of all other parts.
Other needed parts:- 6 Washers and 2 Cotter Pins for rear axle.
Blue-headed and F.H.B. screws for assembling as noted on Assembly Drawing.
DETAILS OF A KIDDIE CAR
HACKLEY MANUAL TRAINING SCHOOL
Scale: As noted L.A. Prescott

DETAILS OF KIDDIE CAR.



DETAILS OF BENCH FOR Y. M. C. A. WAR CAMP.



DETAILS OF TABLE FOR Y. M. C. A. WAR CAMP.

only his interest is sure to be far greater as he is working with something that has a practical use and with which he is more or less familiar.

TWO WAR SERVICE PROBLEMS.

The Manual Training Teachers' Association of Kansas has undertaken the making of tables, benches, and other necessities for the Y. M. C. A. buildings at Camps Funston and Riley as a specific war service of the manual training shops of the state of Kansas. The projects were suggested by Mr. George K. Wells, Director of Manual Training at Salina, who conceived the idea as a result of visits to the two camps. Mr. Wells found that the proposition of making the benches and tables was too large for one school to undertake and presented the matter before the manual training teachers at a luncheon held in Topeka during their annual convention. The response to the suggestion was so hearty that plans were made to handle the work with as little expense as possible to the Y. M. C. A. A committee was appointed consisting of Mr. Wells, chairman, Mr. M. O. Collins of Manhattan, and Mr. H. C. Givens of Pittsburg.

The plans and specifications for the work were drawn up and submitted to the association officials at the camps for approval and the work was undertaken by the school shops best situated and equipped. One member of the committee handles the plans and specifications, another receives the bills and settles them with the association, and another who is located near the cantonments confers regularly with the secretary of the Y. M. C. A. and aims to undertake any new projects which may be required in an emergency.

While the Y. M. C. A. has agreed to pay for the material in the furniture the students in the high schools, in most cases, are paying for it themselves.

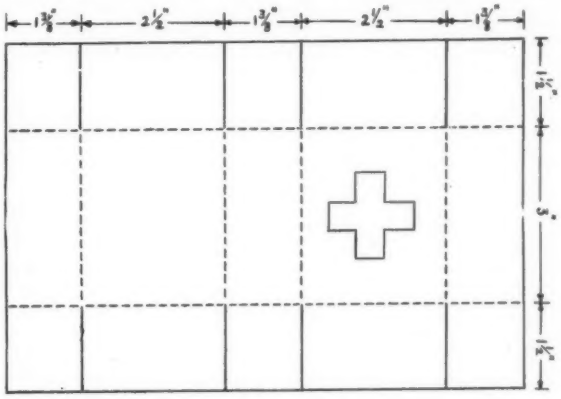
The tables and chairs are as illustrated in the accompanying drawings. As the buildings were planned by one architect and are being built along the same lines, these benches and tables will fit in any Y. M. C. A. barracks. The tables and benches are made of yellow pine lumber and are finished in oak stain. The Wichita and Topeka high schools are working on tables and the Salina high school is making benches and a desk for the secretary.

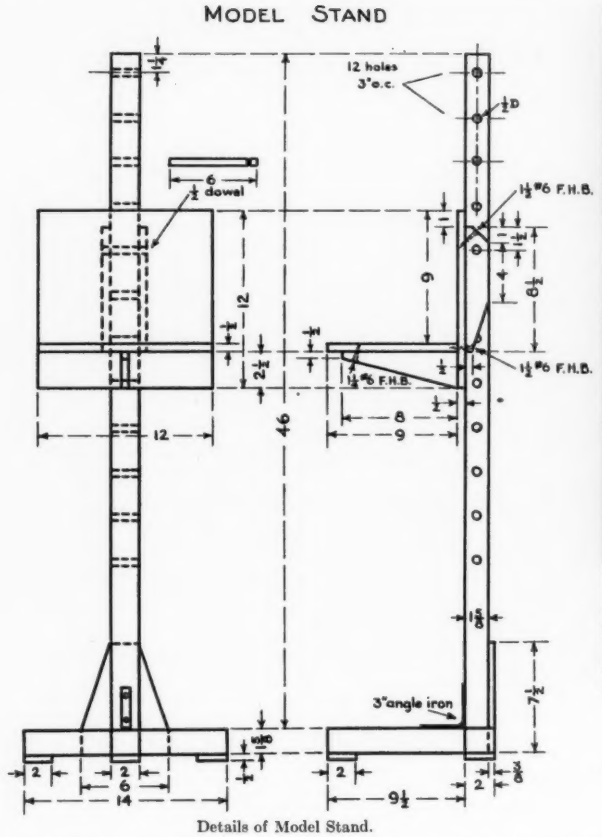
It is planned to make six hundred boxes to hold chess and checker men for the barracks and also to make a quantity of picture frames for pictures which are to be put up in each building.

Information about the work may be had from Mr. George K. Wells, Instructor of Manual Training at Salina.

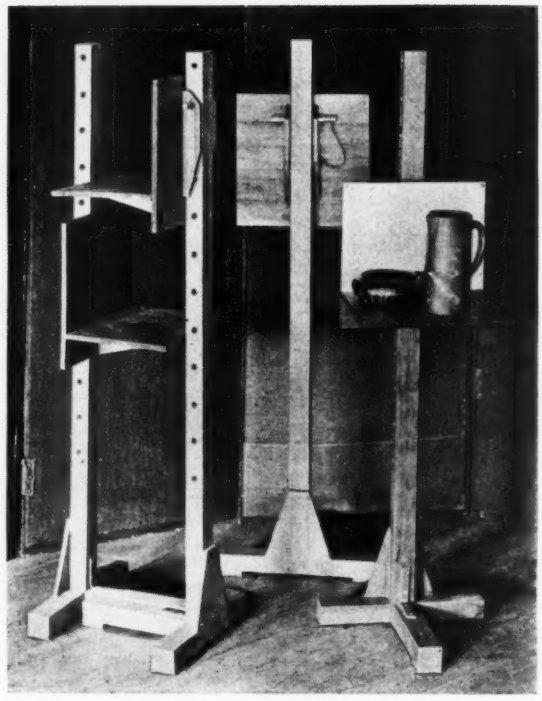
A RED CROSS SAVINGS BOX.

The accompanying drawing illustrates a problem in cutting and folding used in the Milwaukee kindergartens and primary grades. It is a box in which the children who are being enrolled in the Junior Red Cross collect their pennies





Details of Model Stand.



Model Stands.

and nickles until the enrollment fee of 25 cents has been saved. The paper measures 6 by 9 inches over all and is a gray or tan. The Greek cross is red. The completed box measures 2½″ by 3″ by 1″.

A RATION HEATER WINDER.

Otto J. Dorr, Fourth Ward School, Appleton, Wis.

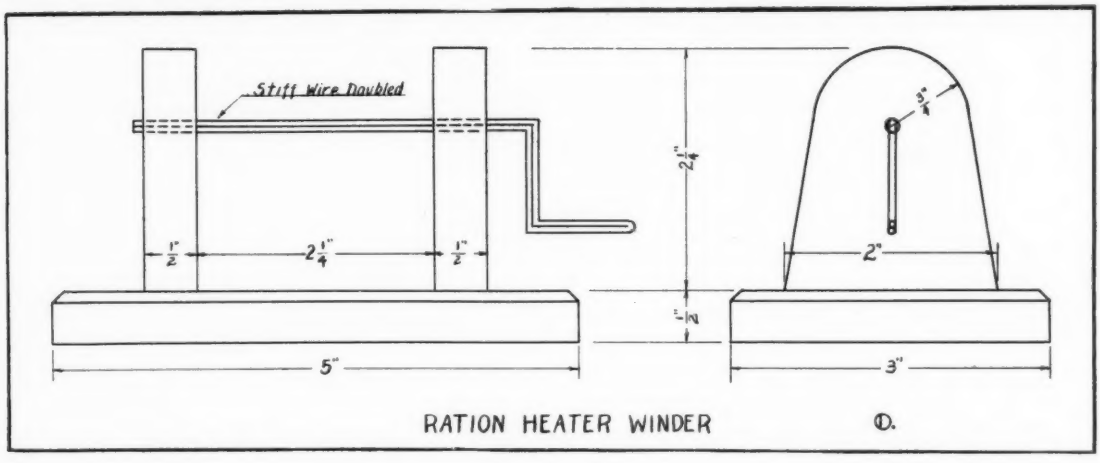
The pupils in the writer's school were recently asked to make ration heaters for the soldiers. Having no mechanical device to assist them, they were compelled to roll the paper strips by hand, which was time-consuming and laborious. The accompanying drawing illustrates a simple device made in the school shop by the manual training classes. It rolls the strips much faster and better than by hand. The crank is made of stiff, small-gauge wire, which is doubled to catch and hold the strips when started. When the roll is completed, the crank is pulled out, leaving a heater which is compact and which has a very small hole.

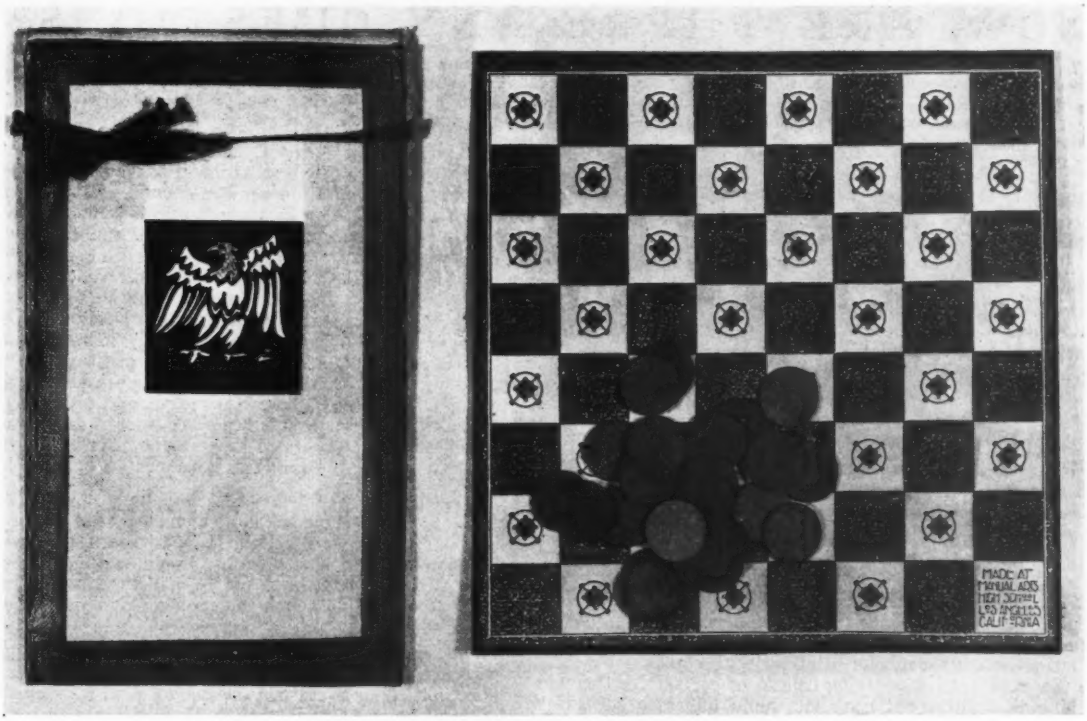
A MODEL STAND FOR THE GRADE CLASSROOM.

George S. Dutch, Supervisor of Industrial Arts, Adams, Mass.

The finding of a satisfactory model stand for object drawing in the grade classroom has long been the problem of the art supervisor. The common method of bridging aisles with boards to display the objects has its limitations in the school where aisles vary in width, and where desks are adjusted to various heights, to say nothing of the objection of having some pupils draw from objects too near them, and also the constant danger of having the boards jarred from the desks. Those model stands found on the market are often too complicated or too costly for practical use in the grades.

The model stands here illustrated have as distinct features small storage area, adjustable height, and backgrounds to silhouette the models. The small amount of space occupied by the stands when not in use will appeal to those having little room for storage. The photograph shows two stands nested together in an area of one and a half square feet. The simple device for varying the height of the shelf will be appreciated when arranging models to desired levels.





SOLDIER'S CHECKER BOARD AND CASE.
The Case measures 4¼" x 7¼" and the Board is 6¾" square.

The shelves and backgrounds are the size of the common drawing papers to permit the use of a variety of values and colors. By placing stands in the front of the room in front of alternate aisles, and other stands half-way back in the same aisles, a set of six stands will afford each pupil an unobstructed view of the models, and still leave the remaining aisles for the teacher while criticising. It is intended that a set of stands be used in common by many rooms.

These stands were made by eighth-grade classes, and furnished many interesting problems, involving as they do simple planing, boring, chiseling, fastening, and finishing. To insure uniformity of results the boys constructed jigs for the planing and boring and performed the different operations working in groups of three or four. White pine was used for the uprights and bases, and whitewood for the shelves. Three thin coats of shellac were applied as a finish.

A CHECKER BOARD AND CONTAINER.

Douglas Donaldson, Los Angeles, Cal.

The pupils of the art department of the Manual Arts High School, Los Angeles, Cal., made during the month of October fifty portable checker boards and cases for California soldiers who will soon be in France. The designs were made by the students and the work of cutting, folding, pasting, and finishing was entirely done by them.

The board proper is made of a tough cover stock on which the checker squares have been printed on the school press. The checker men are die-cut out of a heavy red and green pulp board.

The case is made of white oil cloth, with the smooth side turned in. The binding and the tie string are made of red tape and the design is worked in blue, black and gold.

NEW BOOKS OF NOTE.

Architectural Drawing.

By Ralph Windoes and Harvey B. Campbell. Cloth, 150 pages. Webb Publishing Co., St. Paul, Minn.

There is scarcely any field where the call has been so persistent of late years for good texts for high school use as in the field of architectural drawing. Very much more should be made of architectural drawing in high schools. A good text will help.

The present volume probably comes nearer meeting the needs of elementary architectural drawing than any we have examined. The selection, arrangement, and presentation of materials for a course of work are all good. The problems and other items compiled from other sources are for the most part well selected. The volume is unusually well printed, illustrated, and bound. It undoubtedly will prove a most acceptable book to those who are in need of help along this line of drawing.

Straight Line Alphabet for Lettering in the Grades.

By Milton Clauser. Twenty-one pages, 25 cents. Published by the author, Salt Lake City.

For some years Mr. Clauser's success with straight line lettering for grade boys in the schools of Denver was well known. Since going to Salt Lake City, he has continued this system with the same excellent results.

This little pamphlet is a description of this method of lettering, together with sample alphabets. For those who desire to attempt this kind of lettering with grade boys, this pamphlet will be extremely helpful.

OFFERS HELP.

During the next two years many superintendents will have organized new vocational departments or reorganized their present activities in accordance with the provisions of the federal vocational education law.

The Department of Public Instruction of Rochester, N. Y., has put into form for distribution some vocational data and material (courses of study, building plans, shop layouts, lists of articles) which should prove suggestive and helpful. The vocational activities now carried on include the following:

Automobile repair work, cabinet making, drafting, electrical work, gas engine work, industrial science, machine work, painting and decorating, pattern-making, printing, sheetmetal work, dressmaking, home cookery, lunchroom cooking, millinery, power machine operating, and salesmanship.

Requests for material should be addressed to Mr. Alfred P. Fletcher, assistant superintendent in charge of vocational work.

NOW, ARE THERE ANY QUESTIONS?

This department is intended for the convenience of subscribers who may have problems which trouble them. The editors will reply to questions, which they feel they can answer, and to other questions they will obtain replies from persons who are competent to answer. Letters must invariably be signed with full name of inquirer. All questions are numbered in the order of their receipt. If an answer is desired by mail, a stamped envelope should be enclosed. The privilege of printing any question and reply is reserved. Address, Industrial-Arts Magazine, Milwaukee, Wis.

Teaching Color in Costume Design.

729. Q.—Please send a list of books for teaching color in connection with costume design for grammar and high school girls.—*R. H. S.*

A.—*Izor's Costume Design and Home Planning*, Atkinson, Mentzer & Co., New York; *Audsley's Color Harmony in Dress*, $0.75, McBride & Co., New York; *Ellsworth's Textiles and Costume Design*, $1, Paul Elder & Co., San Francisco; *Bolmar amd McNutt's Art in Dress*, $0.35, Manual Arts Press, Peoria; *Snow and Froehlich's Industrial Art Textbook, No. 8*, Prang Co., New York, Boston; *Fales's Dressmaking*, Scribner & Sons, New York.

Brush Safes.

731. Q.—Could you inform me of a manufacturer who makes brush safes? These safes are to be suitable for keeping shellac, varnish, stain or filler brushes in solution.—*T.C.D.*

A.—American Can Company, Newark, N. J., or Chicago, Ill.

Filling Cracks in Lumber.

733. Q.—A lot of the lumber that is bought at the local yards has large checks in it. What is there that one can put in these checks, which really amount to cracks, so that they will not show? I thought of using putty, but that will not take the same color in staining as oak, of course. Is there anything that one could use that would fill cracks of all sorts and still would take the same stain and show up the same as the rest of the piece?—*C. W. S.*

A.—The simplest method for filling checks in wood lies in the practice of staining the wood the desired color, after drying light sanding to smooth any raised grain, followed by a coat of shellac, reduced one-half with alcohol. This treatment will enable one to judge the color and thereby mix Silex filler and coloring to match the wood to be filled. This process will also prevent the wood adjacent to these checks from being smeared because of the protection offered by the shellac. This filler may be prepared by using 12 parts of pure raw linseed oil, 6 parts Japan drier and one part of turpentine to which has been added all the high grade floated Silex necessary to make a very stiff dough. At this point either raw or burnt Sienna, Van Dyke brown or rose lake in oil may be added in order to produce the necessary tint, care being exercised to avoid the use of too much color. This material should be forced into the checks with a flexible putty knife and after the cracks are completely filled the work should be set aside for two or three days to allow the oil in the filler to oxidize and become hard. Following this treatment any excess filler should be removed from the surface of the work by the use of 00 sandpaper and after dusting off, may be followed with the necessary number of coats of varnish to produce a good finish.—*Ralph G. Waring.*

Fuming Oak.

734. Q.—Could you tell me how one can fume oak in the manual training room? Can fire be used in any way to get a better finish with oak? I have a gas burner in the room. If so, how is it used?—*C. W. S.*

A.—The questioner has made a mistake in his use of the word fume. The fumes necessary for producing color on oak come from ammonia, which in turn reacts chemically with the tannic and pyrogallic acids present in the wood. If a piece of oak furniture be put into a closed box and the latter afterwards filled with the fumes from a pan of strong ammonia, the wood will assume a grayish brown color, depending upon the length of time it is left in the box. This treatment may be augmented by the use of a solution of tannic acid which may be purchased thru any wholesale drug house by the gallon. This is preferable to the dry powder form. This tannic solution as purchased from the store would be reduced with water in the proportion of one part acid to four parts, five parts, or six parts water, depending upon the depth of tone desired. This material is sponged on the wood, allowed to dry, put in a fuming box, treated with the fumes of ammonia for twelve hours, withdrawn and sanded smooth. In the case of oak, chestnut or birch it is advisable to sponge the work with clear water, let dry and then sand smooth before treating with the tannic acid solution. The only way in which fire is of any value in fuming would be to generate steam so that the air in the fuming box may be a trifle moist. The steam should not be allowed to enter for more than one or two minutes at the most. After fuming and sanding, the work should be given a thin coat of orange shellac, dried three hours, sanded smooth with 00 paper and given a coat of varnish which will leave the work free from gloss. Do not fill fumed oak if you desire to produce the color as finished under the trade name.—*Ralph G. Waring.*

Coloring Brass and Copper.

740. Q.—I have made a lamp along the lines suggested in the Magazine for June, 1916. I want to color the copper a verde antique by the blue vitriol, common salt and vinegar formula. I have used a brass rod to hold the lamp fixtures and want to color it to match the copper. Can you suggest a method?—*F. L.*

A.—A green color is obtained on the surface of copper by applying vinegar containing in solution blue vitriol and common salt. The liquid may be put on with a brush. It is a difficult task to color a given piece of brass to match exactly a piece of copper which has itself been colored by chemicals. The liquids used in coloring copper and brass act differently in each case. The following methods of coloring the brass to match the green copper are suggested:

(1) Place some small scraps of copper in the solution used for coloring the copper (equal parts of salt and blue vitriol dissolved in vinegar, as much as the vinegar will dissolve). The copper scraps should be placed in a shallow dish and partly submerged in the acid, which will be free to act on the copper in the air. No mixture should be placed in the sunlight. No green color which is produced on the copper may be transferred to the brass by the use of a brush. This finish will not be permanent, of course, unless the metal is lacquered over with banana oil.

(2) Many greens may be produced by applying chemicals to brass. These may be made light or dark according to the length of time allowed for exposure to the solution. The Scientific American Cyclopedia of Formulas, page 437, (edited by Albert A. Hopkins and published by Munn & Co., New York, 1915), contains the following recipe for a green bronze finish on brass which should meet the requirements of this case:

The repeated application of alternate washes of dilute acetic acid and exposure to the fumes of ammonia, will give an antique-looking green bronze color, when applied to brass, but a quick mode of producing a similar appearance is often desirable. To this end the articles may be immersed in a solution of 1 part of perchloride of iron and 2 parts of water. The color assumed darkens with the length of time allowed for immersion.

A dilute solution of sulphuric acid used as a bath for soldered structures should do no harm to the soldered joints. —*L. L. Winslow.*

Phonographic Motors.

738. Q.—Do you know of any firm that makes a specialty of making phonographic motors? Several boys are making the cases for phonographs, and if possible I would like to know where I can obtain works for same, either spring or electricity.—*A. M. B.*

A.—Phonograph motors, both spring and electric, tone arms and sound boxes, turn tables, and sapphire and diamond points may be obtained from the American Phono-Parts Company, 511 West 35th Street, Chicago, Ill.

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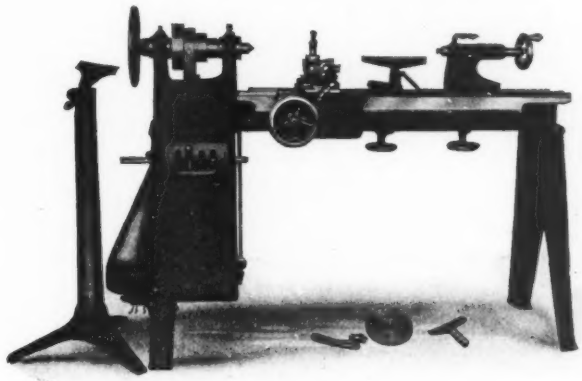

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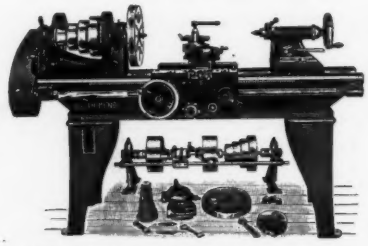

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NEWS AND NOTES FROM THE FIELD.

A course of "applied education" which will improve the industrial situation in Philadelphia has been planned by Supt. John P. Garber. Boys in the last year of the high school will be sent to the industrial plants and commercial houses for service of one week at a time.

Two boys will alternate, one attending school while the other works in the office or shop. The boy who attends classes will help the working student to make up his work in school.

The plan is intended not only as an educational gain to the boys by showing them the purpose of the education they are receiving, but as a means of improving the industrial situation.

A teachers' course in drawing was recently given at the Bryant High School, New York City, under the direction of Mr. Frank H. Collins, Director of Drawing for the city schools. The classes were held on Saturdays and the course consisted of free-hand and mechanical drawing, color and design. The course was open to teachers of all the boroughs.

The Girls' Vocational High School of Minneapolis has adopted a rule not to grant a diploma to a graduate until at least six months after a girl has completed her course, and after she has demonstrated that she is able to work efficiently. In case a student goes into an occupation other than the one for which she was fitted, or in case she is unable to hold her position, the period is lengthened, and the diploma is withheld until a later date.

A vocational survey of Omaha, Nebr., has been ordered, to ascertain what courses in the proposed commercial-technical high school will be of most value to boys and girls in training for vocations. Two courses which have been selected are automobile construction and electricity.

Ardmore, Okla. A class in printing has been organized at the high school. A practical printer is in charge.

A course in vocational guidance and the principles of vocational education for teachers and supervisors in schools, child welfare workers and co-ordinators was recently introduced at the New York City College.

Plans for the new vocational school to be erected at Johnstown, Pa., have been approved by the State Board of Education. The building will be built by the boys in the public schools, working under the supervision of three experienced and practical instructors. It will be a frame building of one story and will contain seven shoprooms and a number of storerooms.

A vocational evening school was opened recently in the high school at Johnstown, Pa. The courses for men include mining, carpentry, painting, electricity, sheetmetal work, plumbing and blueprint reading. For women, there are courses in cooking, garment making, home management, millinery, home care of the sick, home decoration, telegraphy and salesmanship.

The California State Board of Education has asked the co-operation of the Los Angeles Normal School, the University of California, the Kearney University Farm and the Agricultural Experiment Station in the establishment of schools for the training of teachers in vocational subjects. The State University and the Los Angeles Normal School have been asked to establish schools for training industrial and trade teachers, while the other two are for agricultural teachers.

The high school manual training boys at Minneapolis have made benches, kindergarten tables, hat racks, sand boxes, shadow boards and game boards for the schools at the cost of materials. The board has reduced the operating cost of the shops with the opening of a planing mill in connection with the supply house. The mill purchases and prepares the lumber and other material for the manual training and shopwork of the schools in which no planing machines have been provided. It also has charge of the repairing of school furniture.

A vocational center for domestic science and manual training has been opened at Sumner School No. 18, Scranton, Pa. Sumner No. 18 is the fourth school to be designated a vocational center.

An industrial school for children 5 to 15 years of age has been opened at the Morgan Memorial House, Boston. The school had an initial enrollment of one hundred children who came from the foreign district of the south end. Instruction is offered in lace making, cement work, home making, cobbling and plain sewing.

The first school in jewelry making in New York City has been opened in the vocational school on Thirty-seventh Street. The course which covers two years includes jewelry making in all branches, with the exception of watchmaking and silversmithing.